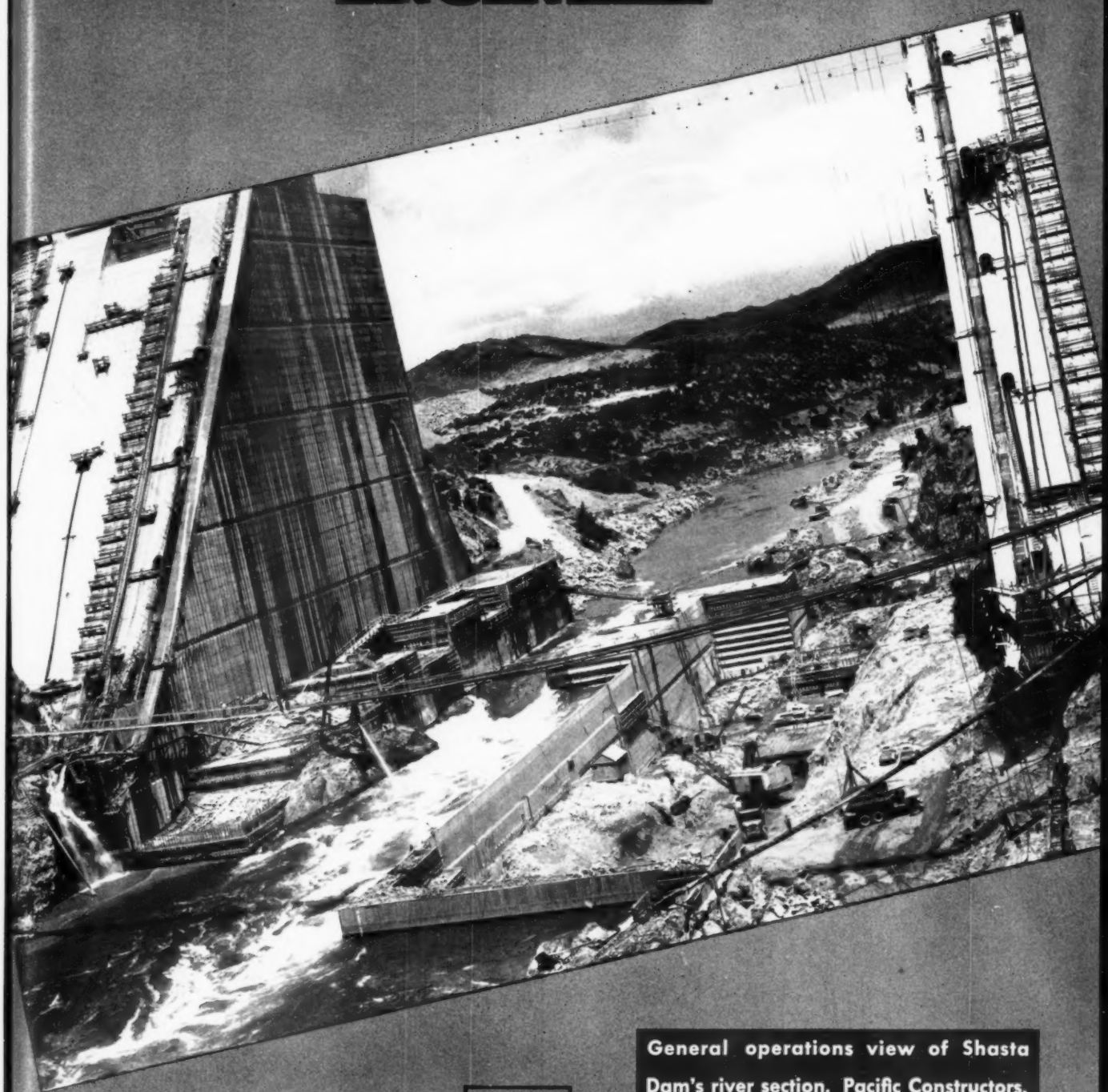
EXCAVATING ENGINEER

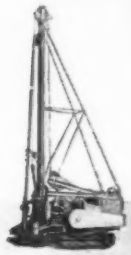
FOUNDED 1905



General operations view of Shasta Dam's river section. Pacific Constructors, Inc., are scheduled to complete their contract for this key structure of the Central Valley Project in January, 1944.

December 1943

KEEP 'EM DRILLING



UNCLE SAM expects you to keep your drilling equipment at work. Doing so plays its part in keeping his factories working, his workers fed, his army and navy fighting. He's depending upon you to do the most with what you have, so that he'll have more to give to his forces.

Keep your drill performing better, make your equipment last longer:

1.

Watch your wire line: be careful tc avoid kinks; keep it lubricated.

2.

Watch all bearings; see that they are tight; remove shims if necessary.

3.

Watch your drilling motion; keep it steady; maintain proper tension on your line.

4.

Watch your brakes and clutches; keep them carefully adjusted to improve operation and increase life of wearing parts.

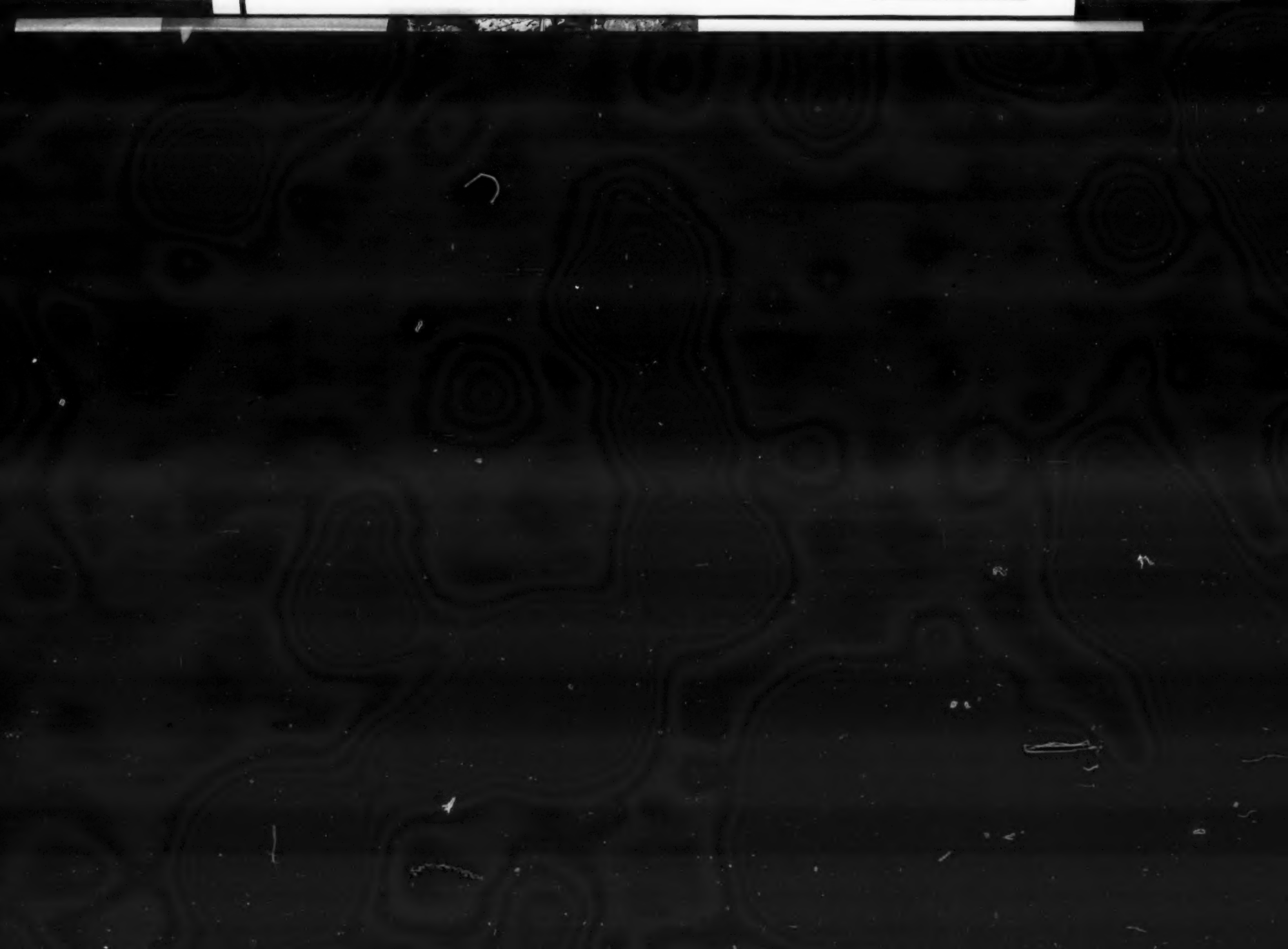
5.

Watch your tools; don't feed them out too fast; it's better to drill with a tight line and let the tools reach out on the stretch and spring of the line and the shock absorber.

H 39

DRILL FOR ★ ★ ★ VICTORY

Bucyrus·Eri



EXCAVATING ENGINEER

FOUNDED 1905

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Yes! YOU CAN USE

With Your Present Tractor

Every available man and machine should be helping the United Nations to WIN final and complete victory. It's a big job, but it will be done . . . and THOSE TRACTORS OF YOURS CAN HELP!

If you have tractors working only part-time with blade, ripper, roller, or other part-time equipment, investigate the possibility of speeding up your jobs by adding additional scrapers to double up tractor effectiveness. Check the listings on the opposite page! Your tractors, regardless of make, have comparable horsepower . . . and that's all that is necessary to have them do an efficient job of hauling Bucyrus-Erie 4-Wheel Scrapers.

All over the country Bucyrus-Erie scrapers are speeding up dirt-moving so that airports, army camps, factories, roads, bridges, etc., can be completed ahead of schedule. Speed up your jobs by getting all of your tractors producing on a full-time war basis at once.

— BUCYRUS-ERIE COMPANY, South Milwaukee, Wisconsin, U. S. A.

Here's why Bucyrus-Erie Scrapers fit your Tractor . . . . . .

BALANCE **They're balanced for fast hauling and easy maneuverability. There are no deadweight superstructures — no heavy, complicated control mechanisms. These factors prevent bogging down in soft material. Balance plus low center of gravity permits working on steep slopes without tipping and permits safe, short, non-stop turns in close quarters.**

MINIMUM DRAWBAR PULL **Double-curve cutting edge "boils" the dirt into the bowl and breaks up the lumps for fast short-distance loading. Dirt enters in vertical column and rolls out on top. Last dirt entering bowl doesn't have to push and pack the whole load in order to get in — therefore, less tractor power is required.**

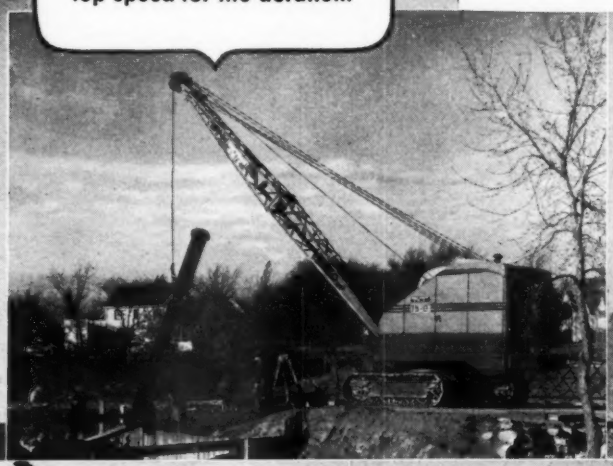
EASY DUMPING **Bucyrus-Erie uses power plus gravity to get a fast, clean dump. The dirt is rolled out by tilting bowl to a nearly vertical position. There is no dead pull against the load — power demand is so low that only a 2-part line is required, hence, dumping can be accomplished at high tractor speeds.**

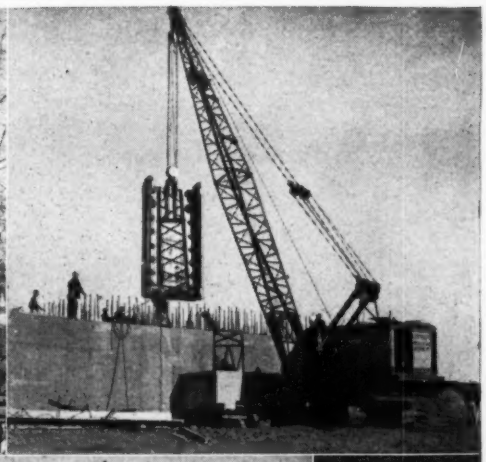
for BUCYRUS ERIE TRACTOR EQUIPMENT

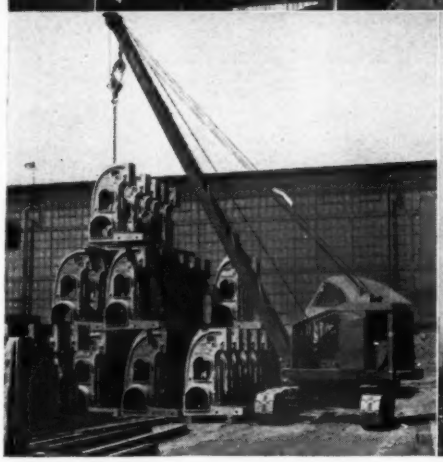
SEE YOUR INTERNA

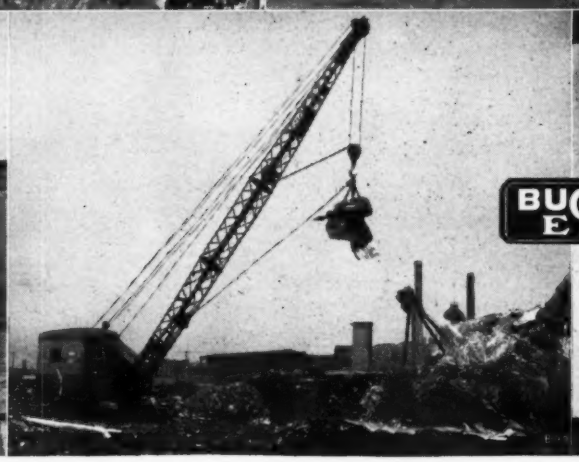
Make your CRANE *Last longer*

Wartime construction puts heavy demands on crawler cranes. Here are a few suggestions that may help you keep your rig going at top speed for the duration:









1. Keep surface of drum well lubricated for smooth rope spooling.
2. Keep brakes and clutches in good adjustment.
3. Inspect the entire machine regularly and remedy any troubles while they're still small. Remember to inspect sheaves, watching grooves, guards and lubrication.
4. Follow manufacturer's recommendations for lubrication.
5. If there are long waits between lifts or moves, shut off engine, never let it idle for long periods.
6. Use proper rope length for each job. A too-long rope means excessive overwinding and that increases wear greatly. Rope life can often be increased by reversing ropes end for end.
7. Keep close watch for frayed or damaged cables.
8. If boom hoist operation is not necessary on particular job, it should be tried and adjusted at regular intervals.
9. Call on your distributor for help with special service or maintenance problems.

Bucyrus-Erie employees have accepted the award of the Army-Navy "E" as a challenge to keep production rising. * *

Bucyrus-Erie

SOUTH MILWAUKEE • WISCONSIN • U. S. A.

Shipyards In A Hurry

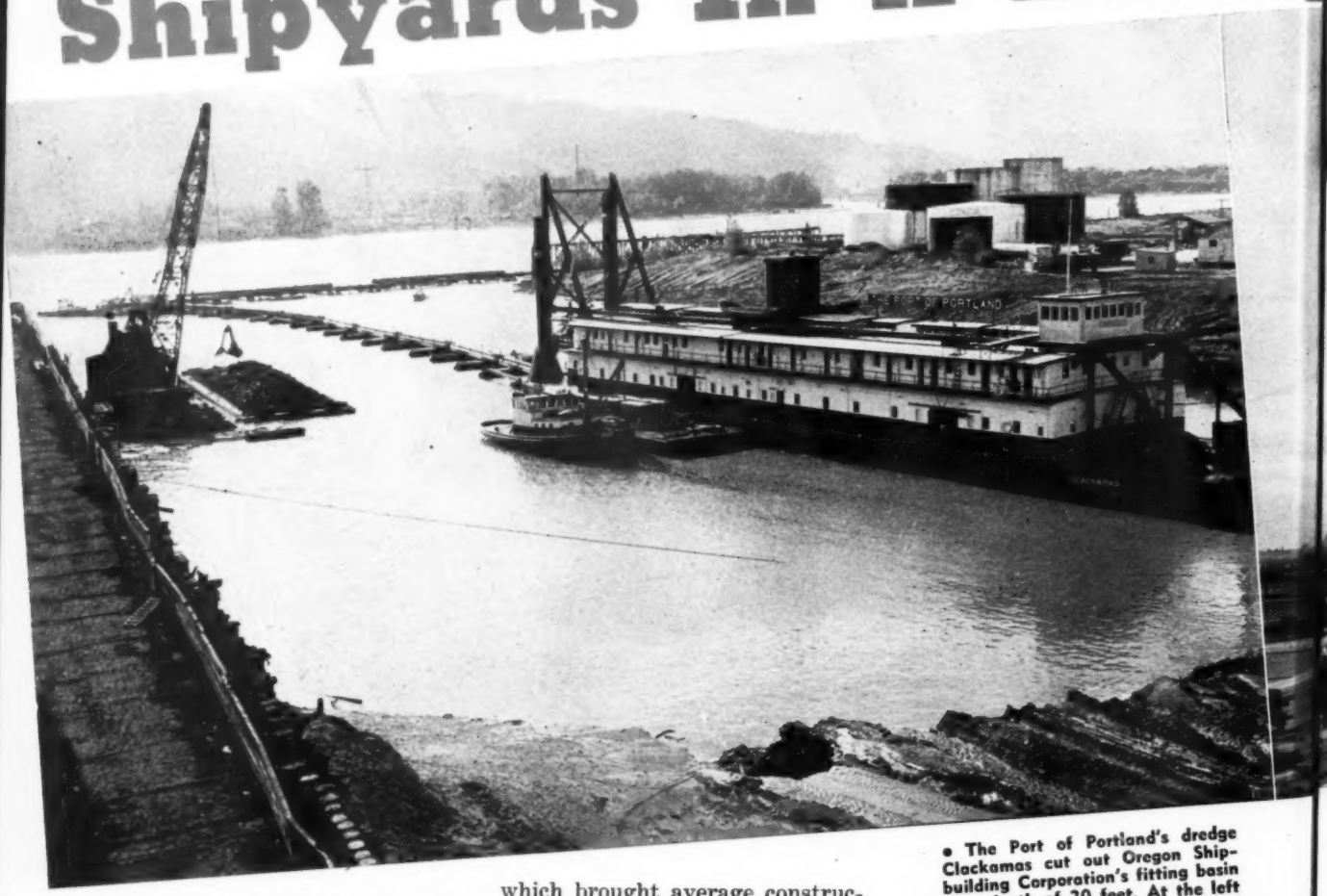
The record-breaking excavation and construction of Henry J. Kaiser's three shipyards in the Portland, Oregon, area was just another "must" job to America's number one nemesis of the "can't be done" boys

By HERBERT LUNDY

THE 60,000 MEN and women employed in Kaiser Company's three shipyards in Portland, Oregon, area busted the buttons off the chests of their jumpers in late September when Oregon Shipbuilding Corporation's 75th Liberty freighter slid down the ways 10 days and 11 hours* after the keel was laid. Neither they nor their boss, Henry J. Kaiser, had ever built ships before the maritime commission gave the "miracle builder" of the west the green light, but brother, they are building ships now.

The world's record launching, which brought average construction time for 11 ships delivered by that yard in September to 42 days days (compared with the 105 days allotted by the maritime commission), gratified, but did not amaze Kaiser's tin-hatted shipworkers. They and the other citizens of Portland and Vancouver, Washington, had watched the Kaiser yards spring up like mushrooms along the river-banks—giant hulls of freighters and tankers rising toward the sky as the excavation and dredging machinery scurried a scant pace ahead.

Three of Kaiser's six record-smashing shipyards are in the Portland area, two in Portland on the Willamette river, and one across the Columbia river in Vancouver, Washington. Oregon Shipbuilding Corporation, the pioneer and pace-setter, is turning out Liberty freighters at a pace never before equalled by shipbuilders. The Kaiser Company, Vancouver, built a couple of Libertys, then was swung over to vessels of unpublicized design. The newest yard, on Portland's Swan Island, is building tankers, the first of which were launched in October.



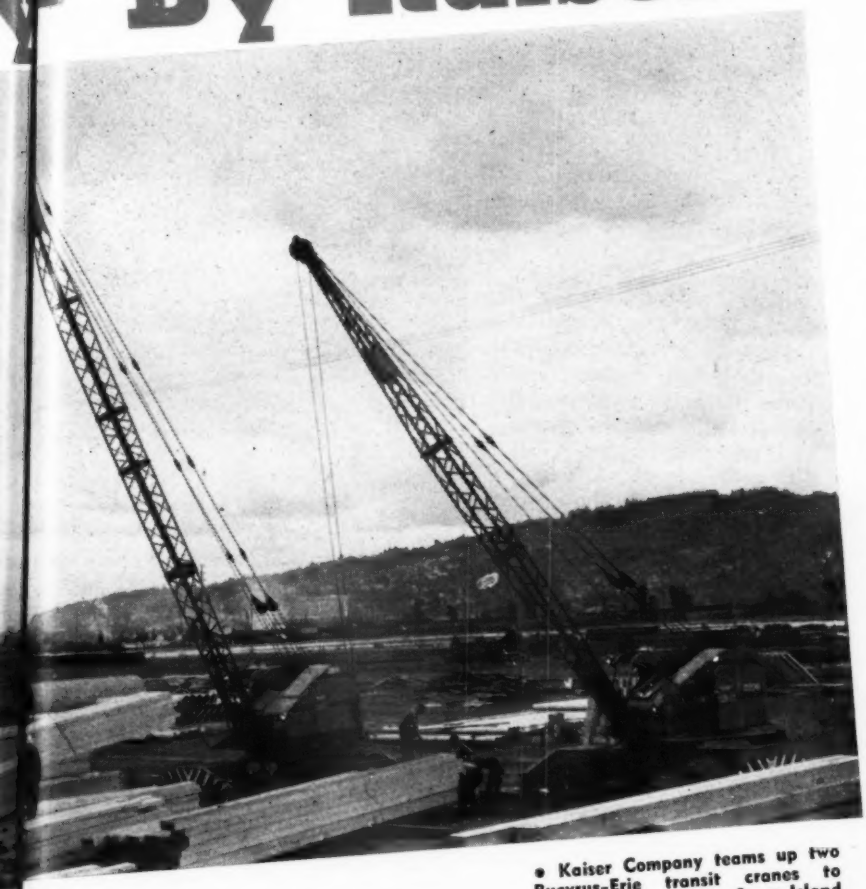
• The Port of Portland's dredge Clackamas cut out Oregon Shipbuilding Corporation's fitting basin to a depth of 20 feet. At the left a barge-mounted steamer equipped with an orange peel bucket helps out.

At publication time even this record was toppled by Kaiser's Richmond, California shipyard where a Liberty ship has been completed in the amazing time of four days 15½ hours.

With the need for speed and more speed ever paramount, Kaiser demonstrated again and again his basic construction principle.

"Give me the men, the materials and the assembly line," says Kaiser, "and I'll give you anything you want at the end of that line."

By Kaiser



• Kaiser Company teams up two Bucyrus-Erie transit cranes to handle lumber at the Swan Island shipyard. These mobile units played an important part in speeding up construction work. (Pacific Builder and Engineer Photo.)

One of the chief builders of Boulder, Bonneville and Grand Coulee dams; constructor of $25,000,000 worth of Cuban highways; of the piers for the San Francisco-Oakland bridge; of highways in British Columbia, Washington and California; of the $44,000,000 naval air station at Corpus Christi, Texas; of cement plants; a magnesium plant and a steel mill in California; Kaiser took shipbuilding in his stride.

He expects to do the same with giant cargo planes, after wangling a contract from WPB for three flying freight trains over extensive opposition of the "can't be done" boys.

Kaiser and the contractors he enlisted met and overcame serious problems in preparing the ground for his three Portland area shipyards, although these problems did not rival the tasks of harnessing the Columbia and Colorado rivers.

Main problem at the Oregon Shipbuilding Corporation yard was the necessity of placing heavy structures on new fill. It was met by constructing building frames which have successfully withstood considerable distortion, joints which overcome variation in line.

Over at the Vancouver yard, a Kaiser engineer took 200,000 cubic yards of gravel out of the shipyard area, enough base gravel for the entire project. The gravel cost 60 cents a cubic yard, compared with the $1.35 the company would have had to pay had it been hauled in.

The Swan Island municipal airport in Portland, which Kaiser took over for his newest yard in the area, appeared to be tailormade for shipbuilding purposes. But here excavators encountered stratified clay and sand from the old hydraulic fill.

Henry A. Kuckenberg Construction Company, Portland, held the principal contract calling for excavations and dry fills for the Oregon Shipbuilding Corporation yard in the St. Johns area of North Portland. The site stretches for 2,450 feet along the Willamette river and occupies 202.5 acres.

A levee thrown up by dredge in 1926 bordered the river. Behind the dike lay sand and muck and two small lakes where the frogs croaked nightly and a few wild mallards poised. The fill had to be made by two methods—by cutting down the dike to make a place for the 11 shipways, with scrapers and tractors, and by hydraulic dredge work.

Before this work could be started, a half-dozen tanks of the Northwest Oil Company had to be moved off the shipyard site, on rollers, and anchored in a new "farm" 200 yards away.

Kuckenberg Construction Company started grading the new Northwest Oil Company location on February 4, 1941, and completed the job on February 10. Kuckenberg moved 16,000 cubic yards of sandy material, using it for an access road of 50 feet width for 650 feet east of the oil company's farm, and extending the roadway in the width of 25 feet for another 130 feet eastward. Bulldozers and scrapers performed the dirt moving honors.

Losing no time, Kuckenberg moved his equipment onto the old dike and started excavating for the eight shipways originally projected on the same day the oil company work was completed, February 10. This equipment consisted of one 1½-yard Northwest

• Excavation for an addition to the main office building at Oregon Shipbuilding Corporation is handled by a Bucyrus-Erie 3/8-yard shovel.

dragline; one Caterpillar 75 equipped with a LeTourneau bulldozer; one sheepsfoot roller; two Allis-Chalmers HD 14 tractors; five D8 Caterpillar tractors; two 25-yard Gar Wood scrapers; one 28-yard Woolridge scraper; two 18-yard LeTourneau Model E scrapers, working in tandem, and a LeTourneau Model F scraper.

Kuckenberg, cutting the levees away and moving the material back for the fill and access roads, moved 190,000 cubic yards of material in this portion of his contract for a price of $51,300. The cost of 27 cents a cubic yard held true throughout the remainder of the material handling. The contractor added 25,000 cubic yards to the shipyard fill by borrowing from the southwest end of the site.

Additional Ways Ordered

When the order came through on March 28 for an additional three ways, increasing the total to 11, Kuckenberg moved back to the levee and bit out another 64,000 yards which went into the back fill. Other portions of the Kuckenberg job included excavating 10,600 cubic yards for the plate yard and whirley tracks, 66,000 cubic yards for the crane ways —tracks on which cranes operate alongside the 11 shipways—and a 40,000 yard fill for access road.

The Kuckenberg contract called for a 1,000-foot freehaul. The firm was credited with 72,000 station yards at ¼ cent a yard for the entire project, over the 27 cents a yard figure, when work was completed September 13, 1941.

Engaged by the Portland Dock Commission, fulfilling its part in the lease to Oregon Shipbuilding Corporation, the Parker-Schram Company of Portland went into the higher ground on the eastern portion of the yard and moved 150,000 cubic yards of dirt with bulldozers and scrapers to create roadway, parking area and fill.

The dredge Clackamas, owned by the Port of Portland, handled the second phase of the fill for Oregon Ship. It started pumping on February 12, 1941, taking material from the channel of the Willamette and the area around Terminal No. 4.

Kuckenberg had taken out sand on the landward end of the giant outfitting basin and the Clackamas dredged it to a depth of 20 feet. This basin is 200 feet wide and 2,250 feet long and reaches into the yard just downriver from the 11th shipway. It is large enough for 10 Liberty freighters, double-berthed, and at one time as ships were sliding off the ways at the rate of nearly three a week, 11 vessels were accommodated in the basin.

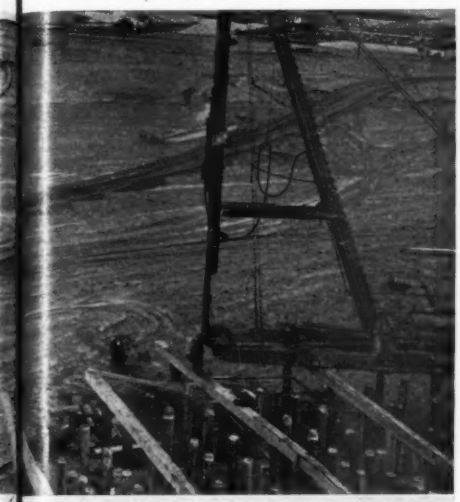
• Pile driving operations at Kaiser Company's Vancouver shipyard showing yard area at left that was filled in by hydraulic dredges.

The Clackamas' first fill, including dredging of the fitting basin, totaled 686,100 cubic yards at a price of $59,851. Most of this material went into the southeast portion of the yard, burying what had once been the larger of the lakes on the property. This part of the work was completed June 10.

The Clackamas came back for its second fill November 24, 1941, and completed its work on February 20, 1942—as the eighteenth

freighter splashed into the Willamette. Fill number two totaled 1,443,000 cubic yards and the cost was $106,880. This brought the site fill up to a uniform plus 26 feet.

Roy Cook, Kaiser Company design engineer, came up from Oakland, California, headquarters at



• At the end of their assembly line, Liberty ship hulls crowd the fitting basin at Oregon Shipbuilding Corporation for final finishing operations.

the start of the Oregon Ship project and is still on deck. William H. Harlow, facilities engineer who has been with Kaiser for eight years (Bonneville, Columbia river north jetty, Grand Coulee, etc.) went from Oregon Ship to Kaiser Company, Vancouver, then to Kaiser Company, Portland (Swan Island), where he now is. John Hallett, general superintendent of construction, and Russell Hoffman, at Oregon Ship, were key bosses.

Working Second Columbia Site

For his second shipbuilding venture in the Columbia river basin, Henry Kaiser chose a site along that deep and mighty river of the West at Vancouver. A potato patch, cow pasture and frog ponds occupied the area when Kaiser's own men moved in on January 25, 1942, bringing equipment which could be spared from other jobs and renting the rest.

Three Columbia river dredges pumped 2,000,000 cubic yards of sand onto the site, bringing 160 acres up to an average fill of 10 feet.

Test drilling showed Olaf Haugen, superintendent of excavation, railroads and paving at Kaiser Company, Vancouver, that the site overlay a bed of river run gravel which would be badly needed. Some of the gravel lay only 1½ feet under the silt, but Haugen went down as deep as 20 feet to get much of it.

He took out 200,000 cubic yards of base gravel with a Bucyrus-Erie 43-B shovel and ten 12-yard White trucks, augmented by smaller trucks when available. This work proceeded as the dredges filled other portions of the shipyard. Haugen spread most of the gravel for base as he took it out, stock-piled about 50,000 yards.

It would have cost about $1.35 a yard, had it been bought elsewhere and brought in. Haugen estimated actual cost at 60 cents a yard.

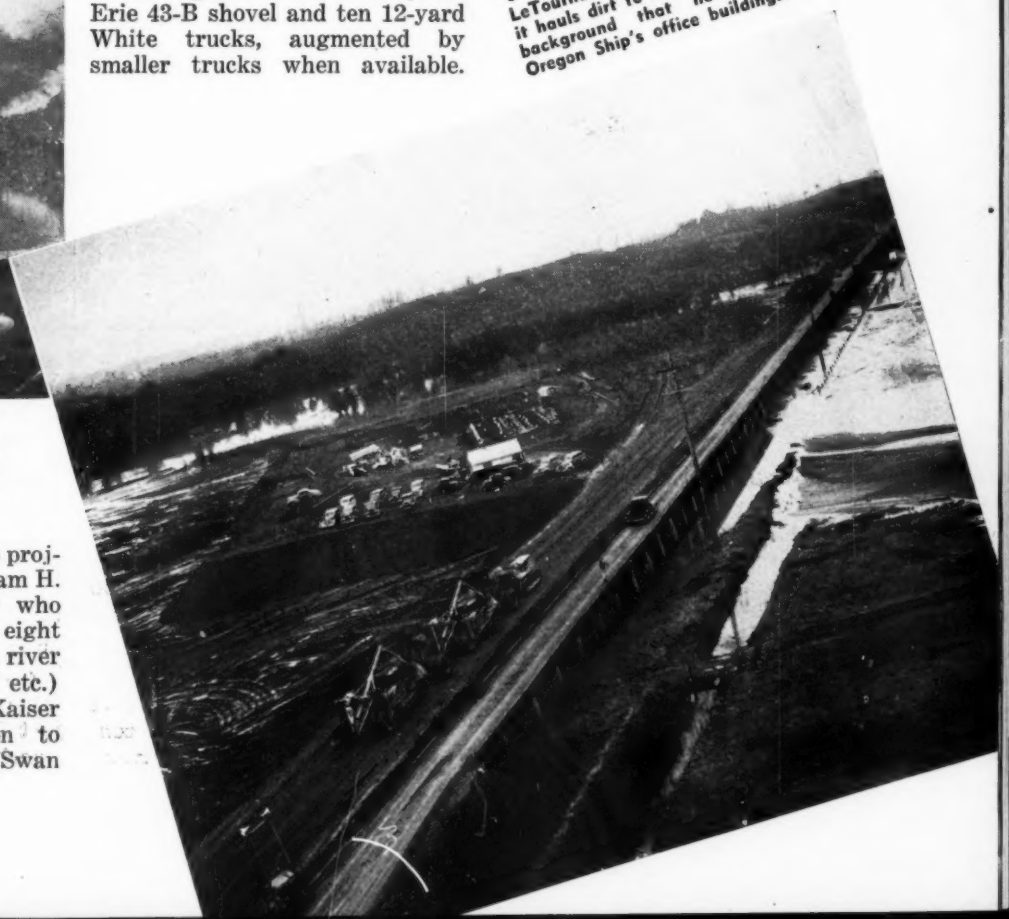
In 27 years with the Kaiser concern, in which he worked on Boulder, Bonneville, Grand Coulee and Shasta dams, and for three years on paving in Cuba, Haugen said he found the Vancouver shipyard work least complicated.

The Vancouver plant, lying between the Spokane, Portland and Seattle railway and the Columbia river in a rectangle 1¼ miles long, is probably the most beautifully-designed shipyard in the United States, a marvel of planning.

Gilpin Construction Company, Portland, drove more than 300,000 pilings for the 12 ways and docks. Yett-United Construction Com-

(*Continued on page 626*)

• A Caterpillar tractor tows two LeTourneau scrapers in tandem as it hauls dirt to the fill area in the background that now supports Oregon Ship's office buildings.



U. S. Army Engineers group millions of dollars worth of excavating equipment to speed up war construction contracts. Here's how this equipment pool operates

By FLOYD SUTER BIXBY

The Army Keeps 'Em

THE U. S. ARMY Engineers have done it again. This time the results are decisive and to the point. For the engineer corps, under the leadership of Major General Eugene Reybold, chief of engineers; Major General Thomas M. Robins, assistant chief in charge of construction; and Colonel S. Strong, chief of the operations branch, construction division, have cut straight to the heart of the acute shortage of construction equipment with a program which bids fair to milk every available service hour out of machines scattered over the nation.

Operating through their main office in Washington, army engineers have created a huge pool of construction equipment. Draglines, power shovels, air tools, trenching machines, tractors, scrapers and the entire range of work tools over $300 in value are represented. Careful use and careful repair of these and other machines coming under army engineer jurisdiction is rightly calculated to ease the pressure of equipment, tire and parts purchasing among the contractors who hold important war contracts with the engineer department. The pool is attracting nationwide attention. A special meeting of the Associated General Contractors of America was held recently in San Francisco to discuss the fine points of the plan, points of which streamline the old army mule and make him a mechanized, pressure-oiled individual.

• A dragline and two tractor-mounted bulldozers perform an important mission somewhere in Alaska as they battle mud on the site of a new landing field.

How the Pool Works

Take the hypothetical case of John Barkovitch and Sons, contractors, of Hickory Ridge, Arkansas. Old man John got along very well for the past seven years with a 1935 model shovel, two old scrapers, several tractors and assorted construction tools. When salesmen were still trying to sell machines John figured he had too many undepreciated hours left to invest more money at the time. He plugged along with his old equipment, doing a good job of dirt moving. Then, everyday construction jobs soon changed to national defense work. War came. Salesmen stopped selling tractors and tried desperately to fill orders.

When work started on a proving ground a few months ago, an army engineer called John in.

"John," he said, "I've got 950,000 cubic yards of grading and common earthwork. I'd like to negotiate a contract with you."

But John couldn't negotiate because he needed more equipment at once. One of his old scrapers needed new tires and both tracks on the 1935 shovel needed replacing. John couldn't get parts because the state highway job he'd just finished did not carry a high priority. The proving ground en-

gineer wanted work to begin at once, but the best John Barkovitch could promise was what his equipment distributor had promised: four months delivery on two new power shovels and seven weeks on dump trucks. Obviously, John couldn't have purchased this new equipment four months before since he had no way of foreseeing the project. Besides, contractors do not purchase equipment without reasonable advance assurance of work.

But John Barkovitch and Sons will benefit by the new equipment

Digging

• The 110th Engineers of Camp Robinson, Arkansas, found this bulldozer a handy tool for grading the approaches of a pontoon bridge during maneuvers.

pool of the engineers, for that pool will not only take care of Barkovitch's new buying but will repair his worn machines as well, after the job is 70% finished. This will discourage John from wearing out his machines on non-essential jobs, because he must own or control from 40 to 50% of the total amount of usable equipment needed to complete the project within the time limit before he can draw on the equipment pool. That is one of the most rigid U. S. Army Engineer Department rules.

One thing is certain: the John Barkovitches all over the nation are interested in this pool. They are asking questions about it. What is it, anyway? Who operates and administers the pool? What is its real purpose? What are the sources of equipment? Can John Barkovitch do a job and still retain his own machines after the job is finished? Some of the answers to these and other questions are the point of this article.

Included in the equipment pool is all construction machinery rented, owned or controlled by the U. S. Army Corps of Engineers. Rented equipment, with or without an applicable recapture clause in the rental clause are included in the pool.

Lt. Colonel Robert L. Richardson, in charge of the Construction Equipment Branch of the Operations Division, Corps of Engineers, will administer the pool as a whole. Each engineer division will have a newly formed mechanical equipment section. Division mechanical sections will delegate machinery to the custody of district engineers within the division.

Briefly, the U. S. Corps of Engineers includes a number of geographical divisions. The Great Lakes Division is one. There are many others, such as the North Pacific Division, Missouri River Division, and the South Atlantic Division. The South Pacific Division, located in San Francisco, includes the San Francisco, Sacramento and Los Angeles districts. This means that three district engineers will control equipment out of the division section in the case of the South Pacific Division.

Benefits of Pool

There are really four distinct reasons underlying the formation

• The men behind the U. S. Army Engineers' equipment pool are (top to bottom): Major General Eugene Reybold, chief of engineers; Major General Thomas M. Robins, assistant chief in charge of construction; and Colonel F. S. Strong, chief of operations branch, construction division.

• Tractor-mounted shovel units of this type are helping fill the Army's need for a mobile emergency road repair tool and ammunition trail builder.

of the pool; four needs for which the pool will give the most efficient solution.

(a) By conserving and controlling the use of mechanical equipment, projects will be finished more efficiently and in less time.

(b) By overhauling and maintaining equipment on essential assignments with government purchased repair parts, this equipment will be ready for other important jobs. By "government purchase" it is meant that the government will only insure the availability of spare parts. The contractor will pay for them.

(c) Contractors are not in a position to afford a long time lapse between the ordering and delivery of equipment. With the equipment pool in operation the government will eliminate the present time buying bottleneck by accepting delayed deliveries as additions to the pool.

(d) The program will regulate the use and prevent the abuse of both government controlled and contractor owned machines. This will provide maximum use with minimum breakdowns and transportation time between jobs.

The source of pool equipment has many ramifications. Machines purchased several years ago by U. S. Army Engineers for hired labor work are in the pool. Future purchases of new and used equipment will be diverted into the pool. So will machines coming under department jurisdiction through the exercising of the recapture clause on army construction jobs. Privately owned machines rented to the department, either with or without a recapture clause, will be a part of the pool. In unusual cases the Corps of Engineers may even requisition idle equipment from private sources if rental cannot be negotiated reasonably; but the Construction Equipment Branch has already announced that its policy will be to avoid requisitioning wherever possible.

Suppose a job of small proportions comes up in the district where our mutual friend John Barkovitch is located. Army engineers award him a contract after determining his old machines meet the necessary requirements for adequacy. There's a couple hundred working hours left in the tires on John's scrapers. The tracks on the 1935 model shovel may last part way through the job as long as the machine doesn't have to walk long distances or travel on rocky terrain.

Three days later John runs into a latent rock removal condition undiscovered by the engineers in preliminary studies. His shovel moves in gingerly but inevitably both tracks go out. What does he do under the pool setup? He calls the operations officer in the district office for advice. Thirty minutes later he has written a letter stating the facts of the case and has transmitted it in person or by messenger to that operations officer. His letter states the urgency of the situation and a list of the parts needed. He waits until a letter of approval can be written by the district engineer to the local shovel distributor, authorizing him to release those parts and materials. All this can be accomplished in two or three hours if the telephone is used to pave the way, and if John's letter is thorough and intelligently written. Persistence, too, is an important item. District officers are overloaded with work these days, and if John takes the letter in himself, or sends Bill Jones the estimator, who incidentally knows Lieutenant Smith, he hastens the arrival of his spare parts.

So, they install the new parts and get the machine digging again in the rocky cut. Then, John's catskinner carelessly tows a scraper load of clay stripping over some rock jaggers and blows out two tires. Can John get new ones by the same method he used to get parts? No, he cannot. This is something different.

John goes to his local tire rationing board and explains the situation. Unless the local quota or state reserve is exhausted, the rationing board will arrange for a high priority rating. In cases where the local quota or state reserve is exhausted, John will then appeal to the district engineer who may, at his discretion, request from the national reserve an increase in the state tire allotment to fill the order for John's scraper. This is necessary because the equipment pool does not include tires at the present time. Nor is it likely to.

Obtaining Additional Equipment

Since the total amount of Barkovitch equipment totals only about 45% of that necessary to finish the job on schedule, John is eligible to draw the balance of his machines from the Army pool. There are certain rules and a number of conditions that govern the selection of equipment.

Other government agencies prosecuting war jobs considered more important than John's may secure equipment before Barkovitch and Sons can get it. Conversely, if the importance of the Barkovitch job is urgent and requires machines not available in the district, John may still get what he needs by writing or telephoning the operations officer or the district engineer. A district request will then be sent up to the division office, and in case the division cannot furnish the machine it may still be secured by transfer from any of a number of other divisions. It is always an excellent idea for a contractor to interview the district mechanical construction equipment branch to determine exactly what machines are available, and if possible he should do this before bidding or negotiating a contract.

It cannot be stressed too strongly that John's chances of purchasing new equipment while on U. S. Army Engineer jobs are virtually nil. The national need of construction equipment is considerably greater than the production capacity at this time. Consequently, the first call for construction equipment goes to the combat branches of the army, navy, coast guard and marine corps. These branches require an impressive percent of the total output. The Corps of Engineers and other governmental departments will take nearly all the remainder, leaving only a very limited supply to industrial users.

Rental rates as established by the Office of Price Administration in its Maximum Price Regulation No. 134 will be charged contractors who draw on the equipment pool. In case equipment is rented to the pool the same price regulations govern.

Suppose John Barkovitch wants to pull a new 2½-yard shovel out of the pool to perform some exceptionally tough digging. Just what does his rental rate include? This is an important question from the standpoint of cost. Rental rates on the 2½-yard machine would apply to the bare machine with standard factory accessories as furnished at the manufacturer's plant. Barkovitch will have to furnish his own operators, fuel, lubrication, mobilization and he will be expected to keep the shovel in good repair during the rental period. Repair parts, welding rod and so on will be furnished at his expense with the help of the district office as described in an earlier paragraph.

The mechanical section of the district office will inspect John's shovel periodically to make sure he keeps it in good operating condition. The mechanical section inspector also helps in making repairs. Machines are certified to be in good condition by the mechanical section at the conclusion of a job before being transferred to another. If a general overhaul is indicated the machine will be inspected when the job is approximately 70% complete, parts ordered from local distributors insofar as possible, and the overhaul made at the completion of the job. The contractor's own machines may be repaired the same way.

Suppose Barkovitch finishes the proving ground job and has an idle period. Can he rent his equipment to the engineers with any degree of assurance that they will return it if he is awarded another job? He may ONLY IF THE

(Continued on page 627)

• U. S. Army Engineers are handling the job of building access roads to our Alaskan air bases. Modern excavating equipment is making speedy completion of these roads possible.

Floodgate Installation Job

Installation of flood gates on a southwestern river will be an important improvement to a major shipping canal

By CHAS. N. TUNNELL

Editor's Note: The name and location of this job, and the name of the constructing contractor have been deleted from this article at the request of the U. S. War Department.

DEEP WATER transportation has played a major role in the development of a southwestern state. The early history of this state, its colonization and later development has been closely tied to the water transportation. As early as 1821, trouble from flood waters has been experienced by the Gulf Coast ports. But, by dredging the natural harbors and river beds, constructing canals, by-passes, turning basin, etc., this state's water transportation has improved to the point that it is now among the leading states known for good ports and waterways.

One of the latest improvements in the federal government's program of improving facilities for water shipping is the construction of the flood gates to control the flood waters of this river with its 40,000 square miles of watershed.

The flood gate construction job involves a project that promises to be a fitting solution to a problem that has existed in water shipping in this vicinity since the earliest colonization. The mouth of a river offered a natural deep water harbor for the state's early settlers. But, with such an immense watershed, raging floods have frequently hampered the harbor facilities and have interrupted shipping. As far back as 1845, this state appropriated $60,000 for improvements of the river harbor. In 1886, a company was organized, and expended one and one-half million dollars in building jetties and other improvements for this harbor. However, due to the high cost of maintenance and other financial troubles, the federal government took over the port improvements program a generation ago, and has continued this control since that date.

In 1929, a diversion channel was completed and a new outlet was created for the river. This diversion channel carried the river waters to the Gulf; leaving the

• Left: Steel sheeting and wood piling for the flood gates' foundations were driven by a Northwest 95 supporting a Vulcan hammer from a 70-foot boom.

old river bed a tidal estuary with a depth of 25 feet.

This diversion channel or man-made river bed intersects, near its mouth, the canal that parallels a coast line. At this intersection, the old problem of mud and clay overflowing into the canal during the flood stage of the river has been a constant one and government dredges have been kept busy keeping the canal open for navigation.

To solve this problem of mud and silt spreading into the canal, the government has let contracts to build flood gates on each side of the river to control the fresh water when the river is on a rise. Although this contract does not call for river locks, the flood gate project is carried out in such a way that locks may be completed at a later date if desired.

The contract was started in January, 1942. It covers the building of one stop log in the old course of the canal for a temporary control until a new diversion canal with the flood gates can be completed. This contract calls for the building of flood gates on each side of the river, a fender system in the canal of approximately 380 feet on each side of the river, and the excavation of the canal for approximately 800 or 900 feet on each side of the river. The contracting company does not have the contract to complete the diversion canal and tie it in with the original canal course. This joining of the new part of the canal to the canal proper will be done under separate contract by dredging to divert the canal flow through the new channel and gates, damming off the section of the present channel where it crosses the river.

Building Access Roads

The contract involves several operations. First there was a matter of building 10 miles of shell road, five miles on each side of the river. These roads were built from highway 36 to either side of the river to make the project accessible and to remain as permanent roads to accommodate the seven houses erected for the gate keepers, three houses on one side of the river and four houses on the opposite side. The roads were built by grading with three Gar Wood hydraulic scraper and bulldozer units. The shell was brought in on the company's barges up the channel and used for road topping without further crushing.

While the road building was under way, the stop log in the original canal was under construction. A derrick barge was used in this operation. Then, to furnish access to the main project, barges were used as floating bridges across the channel for moving in the equipment and for the access roads to the job. These stop logs are a temporary approach to checking the silt flow into the canal from the river channel.

As the flood gate operation is on two sides of the river channel, a ferry boat is operated, making a trip across within five minutes as compared to a ten mile trip by car or truck. A barge service for transfer of heavy equipment is also maintained. After the project was under way, an intra-communication telephone system was installed tying up all divisions of the work.

(*Continued on page 627*)

• Top: Employed at the moment as a crane for concrete handling work, this Bucyrus-Erie 45-B also assisted in the excavation work, swinging a 2-yard bucket from its 70-foot boom. Bottom: The general superintendent of the project watches a portable pump throw out the water from a barge-bridge.

How to Get the Most from You

Here are some practical "do's" and "dont's" on the art of proper wire rope usage that may enable you to lengthen the service life of your cable installations

By GILES E. MacQUEEN

MANY A WORD has been written and tribute justly paid to the modern excavating equipment that has made possible the dams, super highways and countless other dirt moving projects that have become an important part of our civilization. However, without the steel sinews that give power, control, and support, these machines would be helpless. That sinew is wire rope, an unsung commodity that silently does its job from day to day, despite the abuse, neglect and improper selection hazards that it constantly meets.

Wire rope has developed into a highly specialized product. More and more users are beginning to realize the essential part that it is playing in their production operations. This article is intended to point out at least some of the things that happen to wire rope in service and to offer some explanation as to means and methods to get the most for the dollar you spend for wire rope on your equipment. It is not our intent to serve up a complete treatise on wire rope, but sufficient information to prime that inquisitive bump of any good contractor who wants to find out more about the "reasons why" as to his wire rope service.

Precision Made Product

The typical wire rope manufacturer's plant of today embodies all the known improvements gained by past experience, to turn out a finished product as near perfection as it is possible and still be controlled by man. This steady improvement over the years has resulted in practically every important manufacturing step being done with mechanical precision. The heat treatment of the steel is under definite control, the all important cold drawing of the wire through modern dies is giving results that could not have been approached under methods of past years. The physical and chemical tests as the products move through the modern wire rope plant tell a complete story as to what is going into the finished wire rope.

• The author, Giles E. MacQueen is wire rope service manager for Macwhyte Company, Kenosha, Wisconsin.

Modern stranding and closing devices today can do more with the product going through the mill literally than "a monkey can with a cocoanut." As one of our good friends has so aptly expressed it—"wire rope is manufactured under every possible scientific control and used under conditions of no control."

Very often it is the small thing that is over-looked and being small is considered insignificant. One of the best examples of this occurs right at the start of wire rope use in the field. It would be wonderful if the equipment to receive the wire rope could be "backed up" to the closing machine at the wire rope factory, and rope installed without any opportunity for it to be mishandled. Of course, that is impossible. Besides transportation difficulties, there are other reasons, upon which we will touch later, that make this impracticable, but don't let the thought get away from you that many a good length of wire rope has been ruined before it has ever dug a yard of dirt. Any treatment that tends to unbalance the strands, or for that matter, the wires of a wire rope, places a big handicap on that length of rope and the odds are rather in favor of it going out of service at a much earlier period than if it were properly balanced.

Most manufacturers cover this point rather well in their instructions to properly uncoil and unreel wire rope. Any circle or loop permitted in the rope can more often than not result in a kink with injury and an unbalancing effect to the strands and even the individual wires that form the strand. A wire rope that tends to "curl" or "snake," almost always has been a victim of careless handling somewhere either in uncoiling or unreeling at the warehouse or on the job. We older fellows all remember the cartoon of the piano movers showing four men pushing the piano and one in the rear "hitch-hiking." Funny, wasn't it? But it is not so funny when one strand becomes a "hitch-hiker" due to careless handling of the rope and a respectable part of our wire rope dollar "takes a run out powder."

Seizing is considered a bothersome task by many, but there is a good legitimate reason for it. Seizing the wire rope before it is cut, both in non-preformed and preformed fabrications, is good business because case after case has proven that it saves wire rope dollars. That little seizing operation really doesn't take but a minute or two, yet it is responsible for holding the lay of the wire rope so that you won't have any more of those

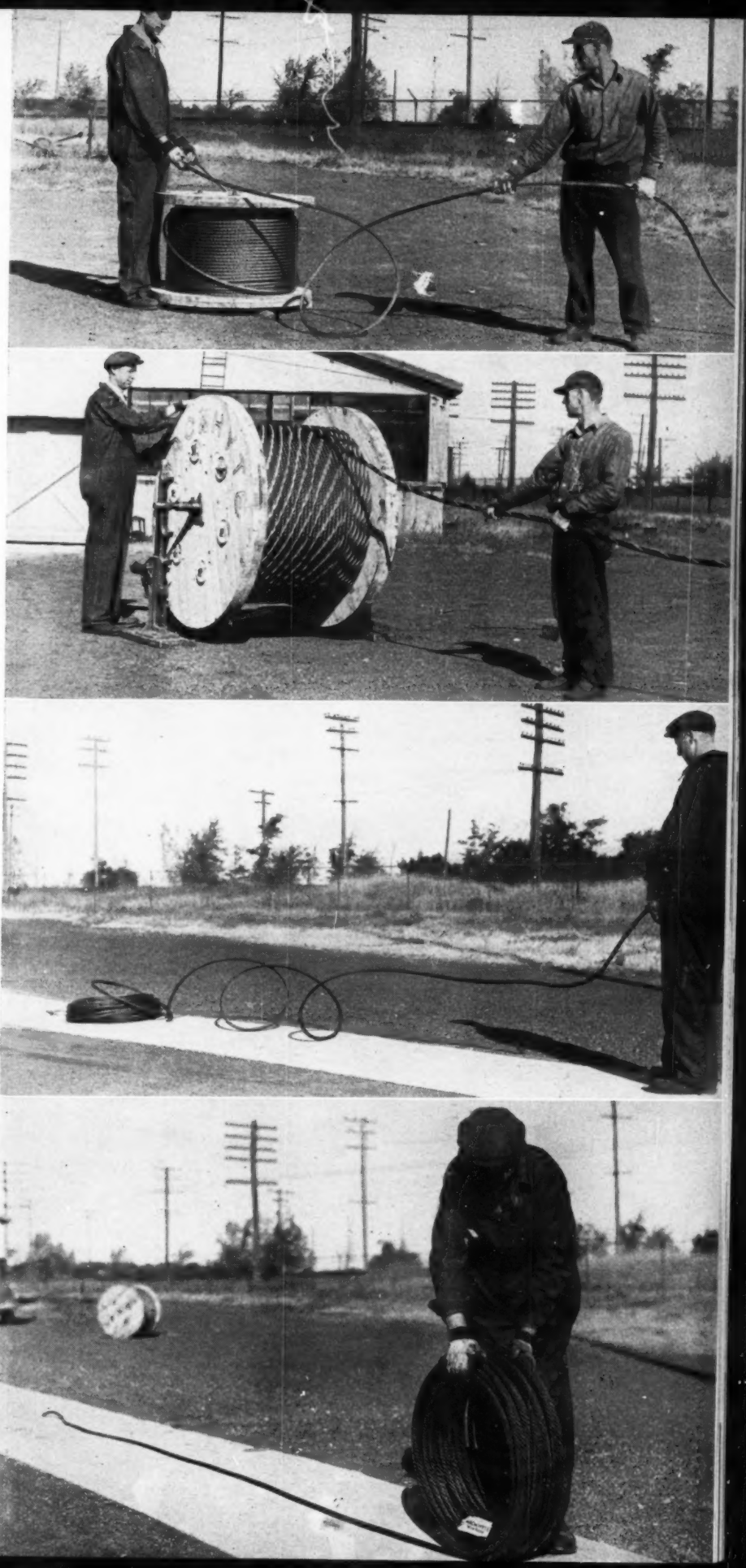
Wire Rope

"hitch-hikers" in the form of lazy strands. Why pay for six strands and only have five strands working for you? So, putting it rather bluntly, mishandling the rope, risking kinks, and not showing proper respect for that little seizing operation can take 16⅔ of your wire rope dollar before you have given that rope the "go ahead" signal. The present policy of conservation of steel for the war effort should be an added incentive for all of us to get as much service as possible out of our rope.

"Limbering Up" Important

In these times the country needs the services of every machine to fullest production capacity. However, in striving towards this end, we must not forget principles of efficient operation. For example, a short period spent "breaking-in" wire rope to conditions and characteristics of the machine on which it has just been installed, saves time that may be more valuable when that machine gets into production. After the rope is installed, operate your machine under light load conditions for a short time until the rope adapts itself to the job. This "limbering up" period allows your rope to go to work with a will without injury to itself and, nine times out of ten, has removed all likelihood of the strands and individual wires catching on their neighbors since the rope behaves in a thoroughly relaxed manner. This precaution makes for longer life and is a fact recognized by most large operators.

When we think of a machine, we know that we must at the same



• **Top to bottom: The incorrect and correct way to unreel and uncoil wire rope. Top view, example of incorrect unreeling, shows how rope twists when removed from reel lying on its side. One of the proper methods is illustrated by the jacked up reel which revolves freely allowing rope to pay out without kinking. Next two photographs show how same principal applies to coiled rope. Twists shown in the first of these views are avoided by the method of uncoiling demonstrated in the last photograph.**

time think of lubrication. Invariably, heeding the warnings of equipment manufacturers, a good shovel, dragline, or tractor operator keeps his machine supplied with the proper grade and quantity of oil at all times. Unfortunately, not enough operators think of wire rope as a machine, when it certainly is. With well over a hundred moving wires in most popular constructions of wire rope, even a relatively short shovel-hoist rope is an important machine. Remember those "hitch-hikers" are ready and waiting whenever a strand or a few wires of wire rope become corroded or "rust bound." Wire rope manufacturers recognize this principle and build into their product plenty of internal lubrication for that purpose. But things begin to happen to Mr. Rope as soon as he goes to work. Nature and her elements in the form of dew, rain, sleet, snow and ice go after him with hammer and tongs just looking for a point of entry where they can get in to do their dirty work.

On work where lubricant will not become a nuisance by coming in contact with the material being handled, the only way to combat this corrosion and rust is to give the wire rope a periodic thorough coating of a good lubricant. Only in this way can you keep every wire and every strand of the rope free to move on its neighbor and accept its just share of the work at hand. In the case of the drag cable on the dragline excavator which comes in contact with the material being handled, external lubricant should not be applied. Internal lubrication by the manufacturer is the rope's only protection for this work.

In mining operations and drag scraper work in sand and gravel pits, for example, some option can be exercised as to changing sheaves to larger size where the load, and hence the rope size, dictates. However, the excavating contractor is limited to the equipment at hand and has to select the proper rope construction that experience has taught best for his equipment. There is one important item that will save a good slice of your wire rope costs and that is proper drum and sheave maintenance. Both drums and sheaves should always be properly lubricated and operate freely.

The groove that receives the rope should be smooth, without "corrugations," and of proper size so as not to pinch the rope. Any drum or sheave violating these maintenance rules is surely taking its toll of your wire rope dollar. From necessity to conserve space and cost of parts, most excavating equipment, besides requiring a rope able to withstand heavy abrasion, also makes paramount the consideration of ability of the rope to resist high bending stresses. This is "right down the alley" of preformed wire rope which is the fabrication best suited to meet just such conditions. With each wire and each strand pre-shaped or preformed to lie naturally, this rope does not fight itself and expends its great strength solely in the work you assign to it. These excessive bending stresses are unseen and not self-evident to the uninitiated, but they are there at the pay off and like the other "hitch-hikers" have

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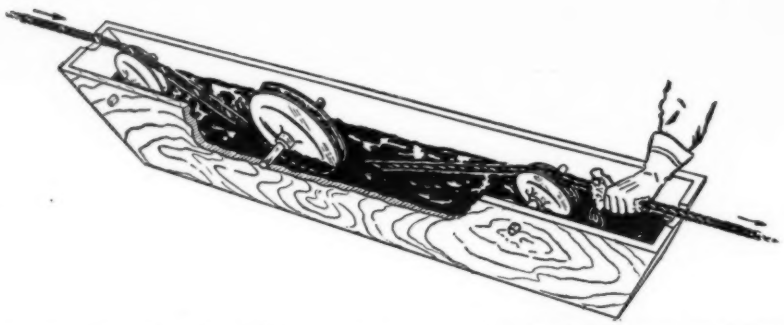
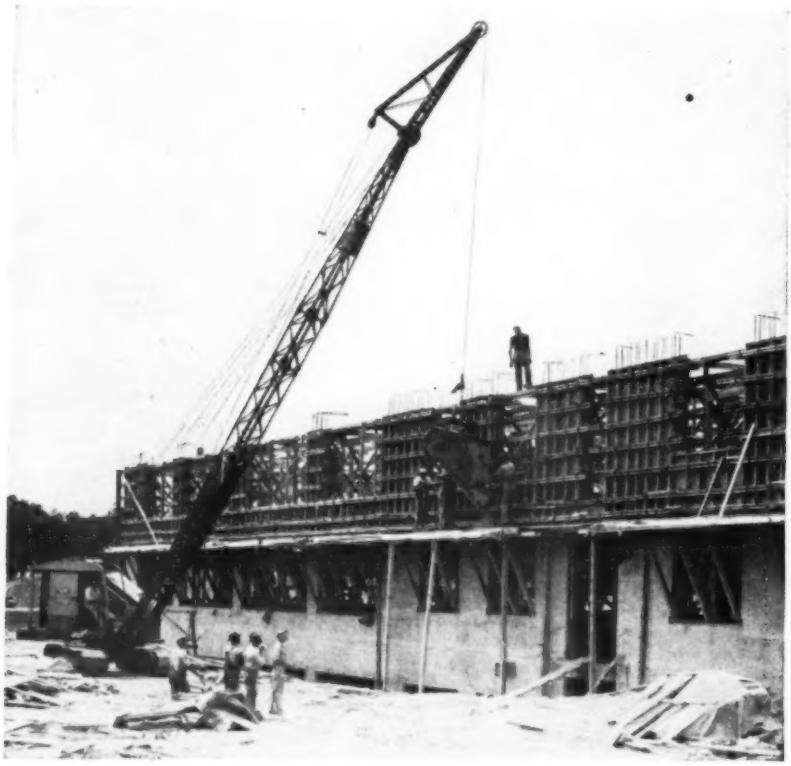


• A simple wire rope lubricating device can be made by constructing a wooden trough as shown here. The rope is run over the end of the trough, under the large center sheave, and out the other end. Rag held at outgoing end wipes off excess lubricant.

• Wire rope plays an important part in the efficient operation of this crane. Don't neglect suspension cables, they need proper lubrication just as do more active ropes such as the hoist-line.



DOUBLE MACHINERY LIFE..

. . BY KEEPING IT PROPERLY SERVICED !

From a business standpoint . . . keeping your machinery properly serviced makes it last about twice as long . . . doubles its output before replacement — lowers investment, depreciation, operating cost, increases your profits.

From a patriotic standpoint . . . it releases twice as many machines for our fighting forces . . . sorely needed machines!

It's easy to keep 'em repaired, too! You simply reach for your 'phone, call your dealer and in a short time he'll have your outfit fixed and back to work! In every territory, throughout the continent, there is an Allis-Chalmers dealer ready to give you quick, expert service and advice. When you have a problem, his knowledge and experience plus yours will quickly solve it. When you have a repair or rebuild job he'll furnish you the highest type mechanical skill, using genuine parts replacements. Dealer service is mighty valuable — use it to your fullest extent. Keep in close touch with your Allis-Chalmers dealer at all times. Let him help you keep 'em going!

Running a machine in need of repairs one day longer than you should may require 10 times as much critical material when you finally have it fixed—be many times as expensive. Protect your own interest . . . help the war effort — have your Allis-Chalmers dealer repair, replace, rebuild your outfits now.

ALLIS-CHALMERS
TRACTOR DIVISION · MILWAUKEE · U. S. A.

THROW YOUR SCRAP INTO THE FIGHT!

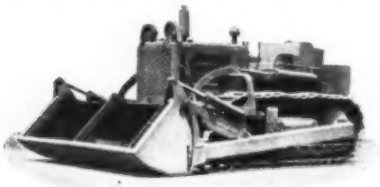
Equipment you ought to KNOW ABOUT

For further details about the equipment on this page please write to the manufacturer, mentioning Excavating Engineer.

Bull-clam

Manufacturer: Hi-Way Service Corporation, 3841 West Wisconsin Avenue, Milwaukee, Wis.

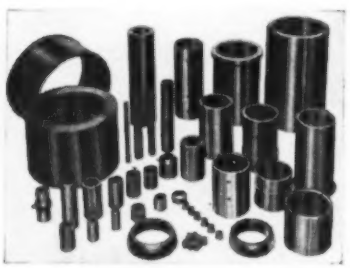
Claims: This Bull-Clam can handle most small shovel jobs; function as a bulldozer; perform scraper operations; as well as do the work of many other units. Hydraulically controlled from the driver's seat, it digs, carries, or floats material, dumps it, cuts smoothly and spreads evenly. In addition to regular cut and fill



work, it removes trees and stumps and carries them to their destination; hauls big boulders, snow or ice; tamps fills, breaks open drains, lays pipe or cable line. By keeping the clam wide open, the outfit may be used as a bulldozer without obstructing the view of the operator. Available in various sizes, the unit is made to fit all makes and models of tractors and has a heaped capacity range of one to four cubic yards. Lifting capacities of these models range from 3,000 to 12,000 pounds. Objects or material may be carried as high as three feet above ground. The blade may be dropped one foot below ground level.

Fabric bearings

Manufacturer: Gatke Corporation, 228 N. La Salle Street, Chicago, Illinois.



Claims: Known as Lubritex bearings, these bearings are distinctly different from Hydrotex (water-lubricated) and Grafitex (self-lubricated) bearings, in that they are oil-lubricated and are made of various material combinations developed especially to meet all kinds of service conditions using grease or oil lubrication. They stand up under impact loads that are too great for metal bearings; have much greater wearing life and lower friction. Even if lubrication fails for limited periods these bearings do not score journals.

Drilling heads

Manufacturer: Wyzenbeek & Staff, Inc., Chicago, Illinois.

Claims: A new line of junior size angle drilling heads designed for production drilling, countersinking, etc. in close quarters. These new angle heads are used on a flexible shaft or extension of a portable electric drill. They come with a 90°, 45°, 30°, or universal heads, have over-all diameters of ½" or ¾" and are used widely in many fields of manufacturing and repair work.

Pay roll calculator

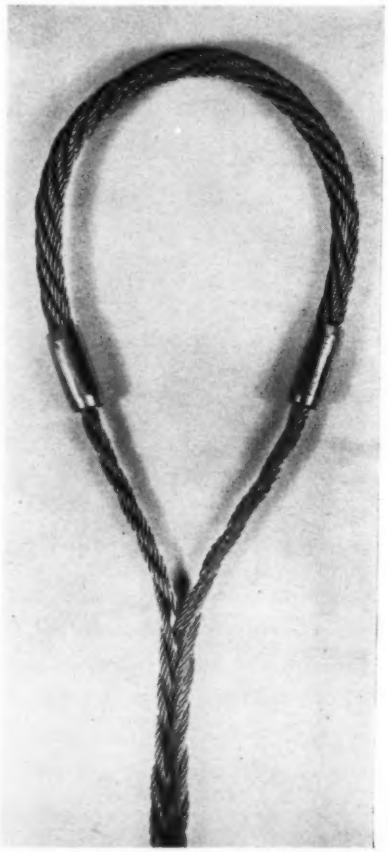
Manufacturer: Berger-Bricker Company, 433 South Spring Street, Los Angeles, California.

Claims: Operating on a simple new principle, this device used in calculating the pay rolls and job costs includes all hourly rates of pay from .50 to $1.75 with a half-cent spread between rates. It covers all time periods up to 104 hours with divisions of one-tenth of an hour. It is handsomely made of lacquered wood and easily fits into a desk drawer.

Wire rope sling

Manufacturer: John A. Roebling's Sons Company, Trenton, New Jersey.

Claims: "Flatweave" is the name of this wire rope sling developed to meet a universal need for a light, flexible, non-kinking, non-spiralling sling to handle loads more easily. It was developed specifically for lifting light and medium loads where the legs choke the load or the sling comes in direct contact with the load being lifted. This sling has a flat bearing surface which allows an even pressure on each of the six ropes which comprise the sling



thereby prolonging its useful life. There are no splices, tucks, or servings to become dislodged on sharp corners, or in pulling beneath loads.

Filter recharge

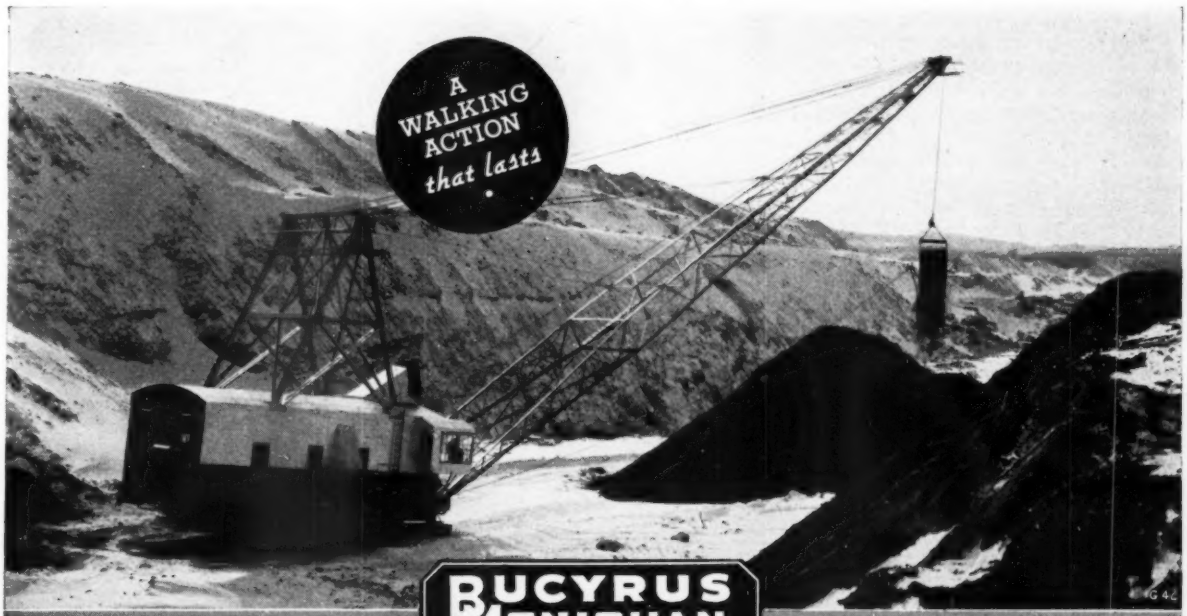
Manufacturer: Wm. W. Nugent & Co., Inc., 410 N. Hermitage Avenue, Chicago, Illinois.

Claims: A new type of inexpensive recharge for the Nugent absorbent and lubricating oil filter. It is inserted in the filter cage instead of packing loose waste by hand. When dirty, cage is removed, inverted, and the recharge slides out to be thrown away.

IT CUSHIONS DOWN

The 9-W carries 7 to 10-yard buckets on 160' to 200' booms. Other models use 3 to 20-yard buckets on 80' to 250' booms.

Watch a Bucyrus-Monighan walk; notice how smoothly and gently the base comes down at the end of each step. There are no jars, bumps or hops to put destructive stresses in the machine. Weighing over a million pounds, the 9-W illustrated cushions its weight down evenly, safely . . . with a smoothness that means years of low-maintenance service. With the smoothness possible only to a wheel rolling in a circular rail, the Rolling Cam gives a positive, fully-controlled action that distributes the forces set up in walking over a wide area. Thoroughly proved in world-wide service, Bucyrus-Monighans walk as surely and dependably as they dig. That's why hundreds of them are in service today. That's why they give the kind of efficient big output performance that's going to spell victory.



Sold by BUCYRUS · ERIE COMPANY
SOUTH MILWAUKEE, WISCONSIN

Field NOTES

● A round, cork fish line float makes a very convenient handle for use on a round "rat tail" file.

Cork Float Serves As Handy File Grip

The ten to fourteen inch round file is the most popular size for dressing out round holes which may be a trifle too small, and to clean out slight amounts of stock, burring and other obstructions. On shovel repair work particularly about the cab, drums, boom and other places about the machine, the files are necessarily used in some odd, uncomfortable and quite inaccessible places and positions. The end of the tapered file is not an easy thing for the fingers to steadily and securely grip. Handles used on the tang end make the file too long and hard to grip. Over the end of such files, however, a common round cork fish line float will be found to be just about the most handy thing under the sun. The hole through the center of the tough cork ball is exactly right to fit snugly but not too far on the file end. No matter in what position or manner the fingers and hand must be, stretch, or reach to hold and guide the file, the float will make an easy, practical, and comfortable grip.—*Frank Bentley.*

Watch Your Step When "Tacking" Contracts

When contracting with a city, town, county, or other municipality, a contractor may well watch his step in performing additional work under his contract that is not specifically covered by his agreement. In other words, in effect, "tacking" contracts.

For here, as a usual rule, public work contracts are governed by charter or statute, and if the same are not complied with, recovery for work done may be denied. Consequently, a contractor should be sure of his ground in performing extra work, in the absence of a formal contract, on the theory that such work is merely an addition to his first contract.

Here is a point of great importance to public works contractors, the overlooking of which may quite easily result in substantial loss. And, as examples of judicial reasoning thereon, and the need for care in such situations, the following cases may be examined with profit.

In one case, the plaintiff, a public works contracting firm, contracted with a city for the construction of a system of water and sewer lines. While working under this contract, the city commissioners directed the plaintiff to construct additional water lines and a storm sewer, that were not shown upon the original plans and specifications.

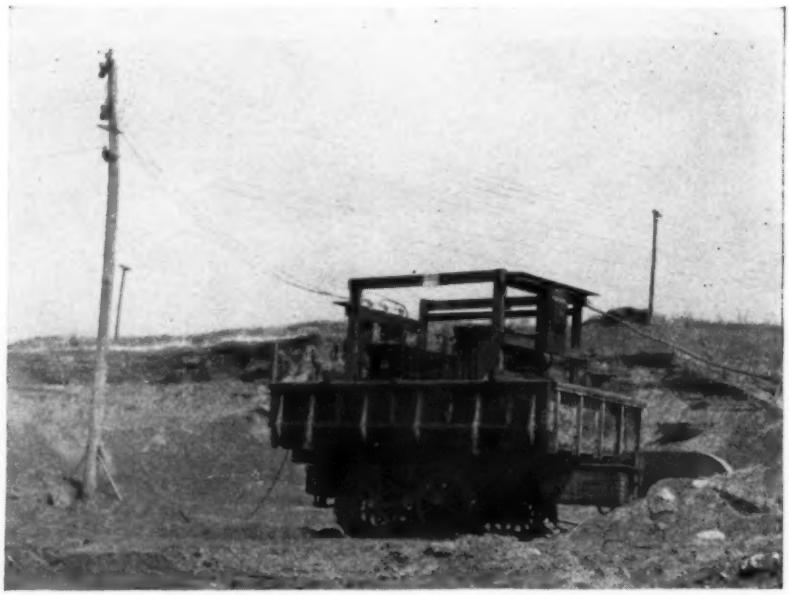
The plaintiff performed this extra work, without entering into a formal contract for it. Both the plaintiff and the city commissioners appear to have thought this work could be lawfully "tacked" to the original contract. The value of this additional work was $9,500. When this work was completed the plaintiff was denied payment on the ground that the city's charter requirement, that all contracts amounting to $500 must be advertised for bids, was not complied with. The plaintiff brought suit to recover. The lower court found for the city, and the higher court in affirming the judgment, in part, said:

"We are of the opinion that the position of the defendant (city) is correct in this matter, and the trial court having necessarily found under its judgment that the construction of the extra water lines and storm sewer were not an extension or addition to the work covered in the (original) contract, it was necessary, * * *, in order for the plaintiff to recover for the costs of such additional construction, to have obtained a contract therefor, after advertisement and competitive bidding, as provided by the city charter, * * *.

"We are forced to conclude that

(*Continued on page 629*)

● An ingenious idea has turned this old Athey wagon into an excellent portable transformer station at Butler Brothers' Harrison Mine on the Mesabi Range, Minnesota.



SAVE LABOR
in Preparing Charges

☆

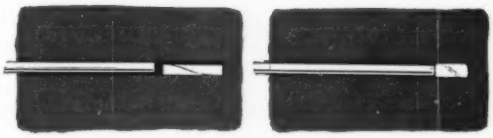
BREAK MATERIAL
for Faster Mucking

You can save labor and time, and get better breakage, with Hercules Tamptite Cartridges. The new design and construction of the paper shell allows the explosive to be tightly packed in the bore hole without slitting the cartridges. There's no spilled powder, even when loading uppers.

The bore hole is filled solidly, with a minimum of air space around the charge. That makes the force of the blast do more useful work. More material is broken, and it is in better shape for mucking.

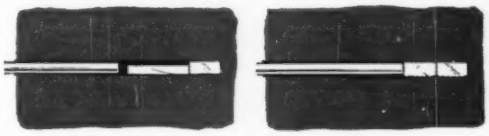
Specify Tamptite Cartridges on your next order for Hercules Explosives.

Here's how TAMPTITE makes efficient Loading easy



1 The regular-size cartridge goes in the bore hole. Note the space to be filled.

2 Pressure from the tamping rod compresses the powder to fill the space.



3 Another cartridge goes in—Compaction takes place inside the wrapper.

4 The charge is concentrated for better blasting results.

HERCULES POWDER COMPANY

INCORPORATED

72 KING STREET • WILMINGTON • DELAWARE

A-60

Shots from the FIRING LINE

'42 Construction Surpasses All Previous Years

Total construction contracts awarded in the 37 eastern states during the first ten months of this year have exceeded the total 12-month volume of any previous year, according to F. W. Dodge Corporation. The dollar total for all building and engineering work started from January 1 through October 31 was $6,892,161,000. The previous record year, 1928, had $6,628,285,000 in contracts awarded during the entire year. This year's ten-month total was 35 per cent greater than the figure for the corresponding period of 1941.

The 1942 record volume is comprised principally of the construction of war facilities; 85 per cent of the total dollar volume represented public-ownership projects. In dollar volume, non-residential building increased 72 per cent over the first ten months of 1941; residential building volume declined 13 per cent; heavy engineering construction increased 42 per cent.

The October contract total, $780,396,000, was 8 per cent greater than that of the previous month, and 29 per cent greater than the October 1941 figure. The current program of the War Production Board calls for emphasis on end products in 1943 rather than on creation of more new facilities and indicated that construction volume will taper off considerably from the 1942 peak.

Three States Safeguard Funds

Highway users chalked up three new victories against diversion of highway funds in the November third elections when Iowa, Oregon and West Virginia voted overwhelmingly to amend their state constitutions to require that all special highway taxes be spent for road purposes.

Sponsors of the three "good roads" amendments insisted that reduced highway revenues resulting from war-time restrictions on motor vehicle use make it more important than ever to surround highway funds with constitutional safeguards to insure:

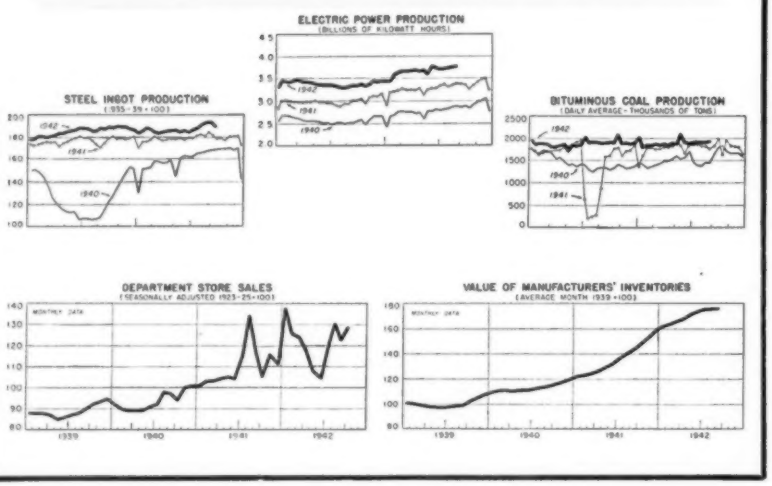
1. Maintenance of existing roads to save tires and equipment,
2. Building and modernizing highways for strategic military purposes,
3. Modernization and improvement of highways after the war,
4. Protect the State's credit.

Fourteen state constitutions now dedicate highway revenues solely to highway purposes.

Kansas and Missouri in 1928 were the first states to safeguard highway funds by amendments to their constitutions. Prior to this month's elections similar action also had been taken in California, Colorado, Idaho, Michigan, Minnesota, Nevada, New Hampshire, North Dakota, and South Dakota.

• A newly-graded landing field, recently reclaimed from a muskeg swamp somewhere in Alaska, receives an early visit from a U. S. Army bomber.

BUSINESS INDICATORS



Army and Contractors Team Up on the Alcan Highway

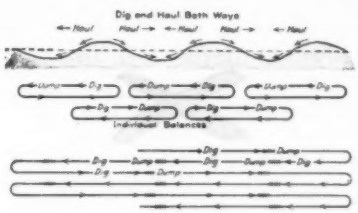
Mobile forces of more than 6,000 civilian workers were moved into Canada and Alaska by plane, truck, boat and railroad to join U. S. Army engineers in cutting and bulldozing the Alcan road through the wilderness of the Northwest with unparalleled speed, according to Commissioner Thomas H. MacDonald of the Public Roads Administration.

Returning from Alaska after a month of directing and inspecting work of the Public Roads Administration on the trail and highway job, Commissioner MacDonald reported to Major General Philip B. Fleming, Federal Works Administrator, that the civilian force was the largest ever put to work on a single highway job and, he believed, the most effective. This force worked at all times

Increase Yardage and Profits with This Job-Proved Cut-and-Fill Method

You'll Make Fewer Turns, Yet Move More Loads in Less Time with Your Present Equipment . . *Try it!*

Big-capacity LeTourneau Carryall Scrapers make big yardage gains out of the turning time saved on this series of cuts and fills on a West Coast access road. What's more, turn elimination reduces wear on tracks and steering clutches.



Here's a cut-and-fill method applicable to almost every earth-moving job in rolling country. You will find it eliminates extra turns, reduces round-trip time, and thus increases the number of big loads you can move with your present Turnapulls and tractor-drawn Carryall Scrapers.

Using individual balances, 10 turns are required to deliver 5 pay loads. By balancing the series of cuts and fills, so you can haul in both directions, you deliver 5 pay loads with only 2 turns. Each turn eliminated gains an average of 0.25 min. or 2 full minutes on this cycle.

Gain $31.50 per Day

Assume a 10 pay yard load and 5.0 min. per load, then on the basis of individual balances you could deliver 120 cu. yds. hourly. With the above turn-eliminating cycle, you save 2.0 min. each 5 loads and increase your hourly yardage to 130 cu. yds. That's a gain of 210 extra yards per Carryall Scraper each 21-hour day. At 15c a cu. yd., this elimination of turns amounts to $31.50 per day or $15,000 on a 10,000 hour operating life!

Figure the increase in yards and profits for your job and Carryall Scraper fleet. The gains will vary with the Scraper size and haul distances, but you'll find the method always increases the number of loads and yardage—without an increase in equipment. Put this Victory-speeding method to work TODAY.

LeTourneau-"Caterpillar" Dealers Well Equipped to Serve

No matter where today's wartime jobs take your equipment, you will find a LeTourneau-"Caterpillar" dealer service base near you. A recent survey of all LeTourneau-"Caterpillar" dealers in the U. S. and Canada (102 reporting) showed an average stock of LeTourneau parts of $10,509.* That means in most cases your local dealer can furnish parts direct from stock.

101 of the dealers employ skilled welders. All but two have shop welding units in addition, 80% have portable welding outfits, capable of getting to your job quickly to make in-the-field repairs. There's an average of 12 servicemen per dealer, many of them factory-trained.

Take advantage NOW of this time-saving parts and maintenance service — make your LeTourneau-"Caterpillar" dealer your Victory Construction Headquarters.

*This includes many small semi-agricultural dealers, who nevertheless stock parts and have excellent service facilities. Larger dealers carry up to $65,000 in parts.

LETOURNEAU

PEORIA, ILLINOIS — STOCKTON, CALIFORNIA

Manufacturers of DOZERS, CARRYALL* SCRAPERS, POWER CONTROL UNITS, ROOTERS*, SHEEP'S FOOT ROLLERS, TOURNAPULLS*, TOURNAROPE*, TOURNA-TRAILERS*, TOURNAWELD*, TRACTOR CRANES. *Name Reg. U. S. Pat. Off.

in closest cooperation with the Army Engineers who were in charge of the undertaking, Mr. MacDonald said.

With it into the wilderness went the trail and highway building equipment of 52 Canadian and American contractors, supplemented by hundreds of tractors, power shovels, portable repair shops and electric plants hastily assembled from Civilian Conservation Corps camps in many States.

The Public Roads Administration, a constituent of the Federal Works Agency, began assembling the big civilian force, quietly, on March 6, when it was requested by the War Department to cooperate in the location and construction of a permanent, modern road.

Under an agreement with the department the Roads Administration undertook to make reconnaissance and location surveys, prepare plans, award contracts or otherwise arrange for and supervise construction. All steps were planned in close cooperation with the Chief of Engineers of the War Department and were subject to his approval.

Under the plan agreed upon, the War Department undertook construction of a truck-trail road following as closely as practicable the route selected for the permanent road after reconnaissance surveys.

Launching of such a large project and completing the many steps preliminary to construction required an all-out effort on the part of Public Roads engineers. A headquarters office for the project was established at Seattle, Washington, and field offices were located at several points along the route. A force of 500 engineers and engineering aids was rushed into the field to make surveys and supervise the work of contractors.

For quick enlargement of the supervisory staff, contracts were negotiated with four well-known engineering firms to act as project managers. These firms were C. F. Lytle Company and Green Construction Company (organized as a single firm) of Sioux City, Iowa; Dowell Construction Company of Seattle, Washington; R. Melville Smith Company of Toronto, Canada; and Okes Construction Company of St. Paul, Minnesota.

These contractors immediately recruited 52 construction contractors who, after approval of the individual contracts by the Public Roads Administration, began the movement of men and materials to the job. E. W. Elliott of Seattle, Washington, took a contract for movement of all equipment and the erection of shops, warehouse and other buildings.

A great quantity of equipment was transferred from the Civilian Conservation Corps to supplement the equipment owned by contractors. Among the major items were 300 tractors equipped as scrapers, bulldozers or graders, 1,000 trucks, 125 air compressors with drilling accessories, 55 power shovels, 200 electric light plants, 65 portable repair shops. Mixers, rollers, pumps and trailers were also supplied.

Approach to the job was by three main routes (1) by rail via Edmonton, Canada, to Dawson Creek, the beginning of the project, (2) from Seattle via the inland water route to Skagway, thence by narrow-gauge railroad to

G. A. Johnson

G. A. Johnson, service engineer attached to Bucyrus-Erie Company's Seattle, Washington, office died suddenly of a heart attack in that city on October 20, at the age of 53.

Mr. Johnson spent his early days in the industry as a shovel operator for various companies in the far West. In May, 1920, he joined Bucyrus-Erie Company as a field erector, working out of the company's Seattle office.

During his years of service in the West, Mr. Johnson made many friends among his contractor customers, who were always glad to have him assigned to their machine installations. An excellent mechanic and operator, he had a thorough working knowledge of excavating equipment erection and operation.

Mr. Johnson is survived by his wife, Sonia; a step-daughter, Lubov; his father, C. J. Johnson and two brothers.

BUILT TO LAST★ AND MOVE DIRT FAST★★
★ BUILT TO LAST! Every working day for 17 years, a Wellman Bucket has unloaded crushed rock and sand for the Concho Sand and Gravel Co., Oklahoma City. In all that time (17 years) not one cent was spent for repairs or maintenance.
★★ FAST? "Our Williams digs and fills in rock and shale better than any other bucket ever used."—F. F. Mengel Co. "We have never seen a bucket dig like our Williams does." —Central Contracting Co.
Williams users report many benefits like the above experiences. They confirm the facts that Williams Buckets are unusually rugged and durable in service and fast in action. It shows too why your next bucket should be a Williams.
DISTRIBUTORS IN ALL PARTS OF THE COUNTRY
Each type of Williams Bucket is covered by individual bulletin. Write
THE WELLMAN ENGINEERING CO.
7002 Central Ave. • Cleveland, Ohio
WILLIAMS Buckets
built by WELLMAN

A whole year's tips on a handy tag...
TO GO WHERE IT'S NEEDED MOST

HOW TO MAKE WIRE ROPE LAST
INSTALL PROPERLY
Avoid kinks by proper unreeling and uncoiling:
Mount reel on jacks or substantial cribbing.
Roll coil along floor.
SPOOL CORRECTLY THE FIRST TIME:
Wind all wraps on tight.
Make each turn fit snug.
Do not interlock strands.
PUT CLIPS ON PROPERLY:
NUMBER OF CLIPS REQUIRED FOR "BLUE CENTER" STEEL WIRE ROPES
Rope Diameter | Number of Clips | Spacing of Clips | Length of Wrench
½" to ⅝" | 4 | 3½" to 4½" | 12"
⅝" to ¾" | 5 | 5" to 5¾" | 18"
1" to 1⅛" | 6 | 6½" to 7½" | 24"
1¼" to 1⅜" | 7 | 8" to 8¾" | 24"
1½" | 8 | 9½" | 24"
Use enough clips—see table. Use a wire-rope thimble. Put U-Bolts on dead end of rope. Retighten clips after running one hour.

ALL THROUGH 1942, our advertising has brought you much valuable information on how to install wire rope, how to maintain and inspect it, how, in brief, to make it last as long as possible.

Many of you executives and operating men have expressed a desire to pass along this information in simple, handy form to your men who really handle the rope, so they'll be able to use it right on the job.

Here they are—a whole year's tips on wire-rope conservation—on a sturdy, convenient tag you can have fastened right to equipment, on controls, or to the wire rope itself.

Printed on heavy stock and varnished for further protection, the tags are ideal for use right on the job—durable, washable, always legible. And they're yours for the asking! *WRITE FOR "TAG A".*

JOHN A. ROEBLING'S SONS COMPANY
TRENTON, NEW JERSEY
Branches and Warehouses in Principal Cities

★ *PROMPT SERVICE*
★ *on essential orders from warehouse*
★ *stocks or mill*

ROEBLING
"Blue Center"
STEEL WIRE ROPE
PREFORMED OR NON-PREFORMED

Whitehorse and to the job, and (3) from Seattle by inland water route and across the Gulf of Alaska to Valdez and thence by highway to the job.

For water transportation the Public Roads Administration has obtained the use of five steamships, one motor ship, five yachts, 14 barges and 10 tugs. About 1,200 men were flown to the northern end of the project to establish living quarters, shops, warehouse and other essentials for operation. Equipment for kitchens and living quarters came from Civilian Conservation Corps supplies.

Actual construction operations began at many points along the route in May and June and have progressed continuously under maximum pressure. The original plan for the Army engineer forces to build a truck-trail road and the Public Roads Administration to follow with the building of a permanent highway on or near the truck trail was revised in August because of the necessity of opening the entire length of the route to truck travel at the earliest possible date.

The forces of the contractors have been given the job of placing a gravel or other type of surface on the entire length of the route and of maintaining it in condition for use. They are working with the Army forces in grading many sections of the road.

All major structures requiring special designs are being designed by the Public Roads Administration and constructed under its supervision. The Peace River, near the southern end of the project, is now crossed by ferry. For use during the winter a temporary timber trestle is being erected.

Workers are housed in buildings from over 40 Civilian Conservation Corps camps that have been dismantled, transported to the job and reassembled.

American and Canadian contractors have already brought to near completion the grading and surfacing of 102 miles of permanent road built to high modern standards. Seventy-seven miles of this work is on the south end of the project where it was not necessary to build a pioneer road. Army and contractors' forces have operated jointly to produce a satisfactory Army road for use during the coming winter. In this pooled operation, forces of the contractors graded and surfaced many miles of the road. On hundreds of additional miles they have followed behind Army engineer forces, widening the road and doing additional grading and surfacing. These operations cover a total of 1184 miles of the 1600-mile route.

Is Your Equipment Registered?

Increasing need for quick deliveries of urgently required construction equipment for the armed forces both in the combat zones and in other military areas has brought forth an appeal for immediate registration of all used construction machinery with regional offices of the War Production Board.

The time limit for registration of used equipment under Limitation Order L-196 expired October 31. Persons subject to the provisions for registration are required to file a completed WPB Form 1159.

The Used Construction Machinery Section, in an appeal for prompt compliance by owners, urged that those who have not as yet registered their equipment should immediately get in touch with the Construction Machinery Specialist at the nearest regional or district office of WPB.

Following is a list of these specialists showing the locations of their offices:

H. S. Swartz, 17 Court St., Boston, Massachusetts.
George Black, Chanin Bldg., 122 E. 42nd St., New York City.
Fred Nelson, 1617 Pennsylvania Blvd., Philadelphia, Pennsylvania.
E. J. Saxton, 1627 Candler Bldg., Atlanta, Georgia.
W. W. Caughman, 409 Law Building, Charlotte, North Carolina.
Pearl H. Miller, 1821 Sterick Bldg., Memphis, Tennessee
Robert J. Carroll, 906 Union Trust Bldg., Cincinnati, Ohio.
Bob Howe, 20 N. Wacker Drive, Chicago, Illinois.
Thomas Ryan, 907 Paul Brown Bldg., St. Louis, Missouri.
J. D. Creel, 910 Fidelity Bldg., Dallas, Texas.
B. M. Burtness, 617 Kittredge Bldg., Denver, Colorado.
Chester J. Deutsch, 1355 Market Street, San Francisco, Calif.
Louis Gardella, 1031 South Broadway, Los Angeles, Calif.
Sumner W. Williams, Bedell Building, Portland, Oregon.
Dick Williams, White-Henry-Stuart Bldg., Seattle, Washington.
W. F. Bartholomae, 800 Boulevard Bldg., Detroit, Michigan.
C. W. Ellis, 326 Midland Bank Bldg., Minneapolis, Minnesota.

R. E. Reed, chief of the Used Construction Machinery Section, in a statement issued by that office, reminds owners of used construction machinery that L-196 also requires the submission of WPB Form 1333 at any time a change of major status or location occurs on equipment listed by them with their regional office.

"The War Production Board," the statement said, "solicits the full cooperation of the owners of used construction machinery with the construction machinery specialists in assisting to place their equipment in war production.

"Many items of construction equipment are of extremely vital importance to our war effort. In numerous instances, critical items of construction equipment, owned by states, counties and municipal bodies have been made

HAISS Hi-power
FOR PAY-LOAD
CLAMSHELL DIGGING
ALL SIZES AVAILABLE
Your good crane deserves one! Real he-man digging power and a hefty sturdiness that will stand up to your toughest goings . . . a Haiss Hi-Power will make money for the man who owns it. Catalog on request.
HAISS QUALITY EQUIPMENT
FOR 50 YEARS
1892 ★ 1942
In Stock at New York, Philadelphia, Baltimore, Atlanta, Hartford, Richmond, Charlotte and Los Angeles

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DISTRIBUTORS EVERYWHERE

available to the government for the prosecution of important war jobs.

"An increasing demand by our combat forces make it imperative that full utilization of existing equipment be maintained."

'41 Quarry Employment Record

A notable increase in employment at stone quarries and related plants during 1941, compared with 1940, was shown by reports from operating companies to the Bureau of Mines, United States Department of the Interior. The number of man-hours worked by all operating plants increased more than 17 percent over the previous year. In no other year since 1930 has the number of man-hours worked in 1941 been equaled.

With the increase in volume of work, accidents to the employees also increased. For each million man-hours worked during 1941 the reports revealed the occurrence of 0.44 fatal accidents and 39.67 nonfatal injuries, compared with the previous year's record of 0.49 and 35.23, respectively. These rates represent all injuries that disabled an employee for more than the remainder of the day on which the accident occurred. The actual number of accidents during 1941 included 76 fatalities and 6,870 nonfatal injuries.

Operators' reports to the Bureau of Mines showed 86,123 men employed in 1941, of whom 35,946 men worked in the quarries proper and 50,177 men worked at cement mills, limekilns, rock-dressing plants, crushers, or on other miscellaneous work associated with quarrying.

Quarries producing limestone had the greatest increase in man-hours of employment in 1941. Slate quarries were the only branch of the quarry industry that had a decrease in its frequency of accidents per million man-hours. The combined accident-frequency rate for all classes of quarries and related plants was 12 percent higher in 1941 than in 1940.

ARBA Nominates New President

C. W. Brown, chief engineer, state highway department, Jefferson City, Mo., is official nominee for president of the American Road Builders' Association, the nation's No. 1 highway organization. The nomination is tantamount to election. Mr. Brown will take office early in 1943, succeeding Major Chris J. Sherlock, who is now stationed at Denver with the U. S. Engineer Corps. This is the highest honor within the gift of his 30,000 colleagues engaged in the highway industry and profession in North, South and Central America and 34 countries in the eastern hemisphere who are represented by the American Road Builders' Association.

Mr. Brown is a native of Vandalia, Mo., and a graduate of the Vandalia high school. Upon graduation from the University of Missouri with the degree of B. S. in Civil Engineering in 1910, he became an engineer in the maintenance department of the C. B. & Q. Railroad Lines West. He had previously served as engineer on electric railroad construction and toll road construction. From 1912 to 1915 he engaged in private engineering and contracting and served as county engineer for the following two years. He joined the staff of the state highway department in 1918 and acted as office engineer, chief clerk, engineer of surveys and plans and assistant chief engineer before attaining the position of chief engineer which he now holds. A member of the American Society of Civil Engineers, he is past president of the Missouri Highway Engineers' Association and the Mississippi Valley Association of State Highway Departments. He is also on the executive committee of the American Association of State Highway Officials and a member of the Missouri State Council of Defense.

Nominees for president of ARBA divisions are James J. Skelly, president, Associated Pennsylvania Constructors, Media, Pa., highway contractors' division R. B. Traver, county superintendent of highways, Onondaga county, Syracuse, N. Y., county highway officials' division, and Raleigh W. Gamble,

SPEED OUTPUT with GATKE SWING FRICTIONS

GATKE moulded Swing Friction for a NORTHWEST Shovel. Available for all models.

GATKE QUALITY BRAKE LINING & CLUTCH FACINGS are made for ALL applications

Non-Metallic Bearings to Replace Bearings of Critical Metals

TREMENDOUS POWER—for effortless control—no let down when things get hot.

SMOOTH ACTION—for precision inching—no grabbing or chattering.

LONG WEAR LIFE—beyond comparison.

. . . These are some of the reasons why GATKE Swing Frictions help get the job done FASTER. Try them and compare results!

Moulded to finished dimensions in all shapes and sizes—LARGE or small.

Shipped from stock for popular shovels, cranes, hoists, etc. Just tell us what you need or send for literature.

GATKE CORPORATION

232 N. La Salle St. Chicago, Ill.

superintendent of street construction and repairs, Milwaukee, municipal division.

Renominated as association vice-presidents are Paul B. Reinhold, president, Atlas Equipment Corp., Pittsburgh; Charles W. Smith, president, Smith Engineering and Construction Co., Pensacola, Fla.; Lion Gardnier, vice-president, Jaeger Machine Co., Columbus, Ohio, and Robert A. Allen, state highway engineer, Carson City, Nev. H. C. Whitehurst, District of Columbia director of highways, Washington, was renamed treasurer.

Directors named for the term ending in 1946 are R. H. Baldock, state highway engineer, Salem, Ore.; Robert B. Brooks, consulting engineer, St. Louis, Mo.; J. F. Cast, manufacturers' sales manager, Firestone Tire & Rubber Co., Akron, Ohio; Paul L. Griffith, vice-president, Koppers Co., Pittsburgh; W. R. Macatee, managing director, the Asphalt Institute, New York City; A. E. O'Brien, secretary, Associated Pennsylvania Constructors, Harrisburg, and Nello L. Teer, contractor, Durham, N. C.

Urge Jersey Ship Canal

Immediate authorization for construction of a New Jersey ship canal, "missing link" in the Atlantic Coast inland waterway system, was urged upon President Roosevelt and congress in a resolution unanimously adopted by the Atlantic Deeper Waterways Association at its 35th annual convention which concluded October 23 at the Bellevue-Stratford Hotel, Philadelphia.

The resolution asserted that the proposed canal, which would cross New Jersey between Sayreville and Bordentown, was "essential to the defense and economy of the nation" and would "mitigate the rationing of essential commodities."

Attitude of Washington officials as to the essentiality of the project, however, was left in doubt by a letter to the convention from Defense Transportation Director Joseph B. Eastman, who stressed the importance of existing waterways but declared that initiation of new projects not directly in the war interest would have to be deferred. His letter did not say whether he considered the proposed New Jersey canal in the latter category, but it was interpreted by some as implying his office would not sanction the project.

"Everyone familiar with waterway transportation," Eastman said, "fully realizes the importance of carrying out a well-conceived program of public improvements with respect to the development of projects and the improvement of navigation, and such associations as yours should be commended upon the success thus far attained.

"We must all realize, however, that the initiation and completion of new projects which are not directly in the war interest should be deferred for the duration.

"The water carriers operating over inland waterways have done much to relieve the heavily burdened rail lines. However, as the burden of the railroads becomes heavier and especially, in view of the probable contraction of trucking service because of the rubber situation, it becomes not only important but absolutely necessary that the waterways be utilized to their maximum capacity.

"While much has been accomplished along these lines there is much more that could be and should be done.

"I am fully cognizant of the situation and in order to bring about maximum utilization of the waterways, I have addressed the executive head of every governmental agency urging the use of these waterways, as this is one means of transportation which has not reached its capacity."

Convention speakers declared that the East Coast gasoline and fuel oil shortage could be eliminated by construction of the proposed New Jersey canal. Such a canal, they said, would provide the missing link in the chain of inland waterways, free from the submarine menace, over which could be transported all the petroleum products necessary to make up current shortages.

Road Maintenance Possible

Despite declining highway revenues resulting from the rubber shortage and gasoline rationing, ample funds probably will be available for road maintenance during the next two years according to a study by Dr. Richard H. Rush of the Department of Commerce. Due to material and labor shortages new construction is expected to be held to minimum needs.

Shortage of labor and materials, increased commercial use of highways and increased maintenance needs as irreplaceable roads reach the end of their normal lives, are among the major wartime maintenance problems listed by Dr. Rush. To deal with these problems the study recommends:

1. Early preventive maintenance,
2. The possibility of maintenance work by the Army in acute labor shortages,
3. Use of tanks and other heavy military equipment on the highways be kept to a minimum at Army discretion,
4. Re-routing of traffic to equalize road wear,
5. Maintenance requiring large amounts of material or labor be deferred until the end of the war if possible without interferring with essential highway transportation.

Are You Planning to Help?

Thirty million man days are wasted each year. Enough to build 122 destroyers, or 6,000 combat planes or 11,400 light tanks or 420,000 machine guns.

That waste is a tribute to the power of tuberculosis—the sabotage nobody sees. Large as those figures may seem they only represent a fraction of the time that tuberculosis steals from the national war effort. They take no account of the physicians, nurses and others caring for the patient; they do not consider the time of the persons who may be called on to aid the families of the patient. They do not even recognize the fact that the man or woman with undiscovered active tuberculosis is infecting countless others of all ages.

It is to fight this sort of sabotage that the anti-tuberculosis associations all over the country are making an un-

Convoys & Counterweights

CONVOYING ships act as buffers to protect vital cargoes from destruction by enemy forces. Owen counterweights divert material being handled away from sheaves and cables, assuring that the buckets will "come through" with capacity loads for the longest possible period of service.

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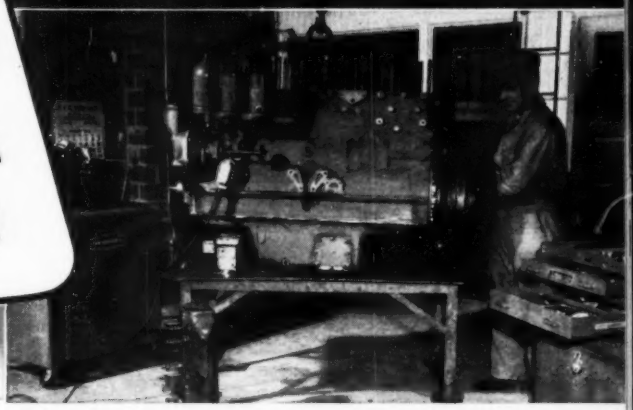
OWEN BUCKETS
A MOUTHFUL AT EVERY BITE

YOUR SALVATION INTERNATIONAL SERVICE IN 1943!



NEW International TracTracTors, Wheel Tractors, and Power Units will not be available for civilian use in 1943 except in very limited quantities. The Armed Forces are getting most of them.

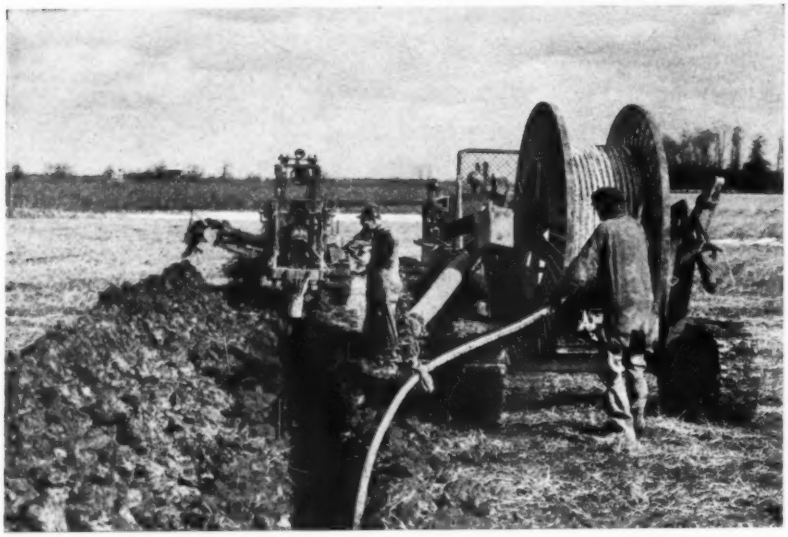
But of this you can be sure: the International Industrial Power dealer will render you International Service to the very limit of his ability. His service facilities, which you learned to depend on in peacetime, have been enlarged, improved, and broadened to meet wartime needs. His shop is busier and better equipped than ever. His mechanics and servicemen are meeting—and solving—new problems of overhaul, reconditioning, and repair and doing a bang-up job of it. His stocks of Genuine IHC Parts are in A-1 shape.

And yet, Service as the International Industrial Power dealer thinks of it, means more than repairing tractors and equipment and supplying you with the repair parts you want when you want them. He's a sound, practical consultant on your equipment and construction problems. He knows machinery and its application to your specific jobs. He knows many a short cut in getting jobs done. He can help you get maximum output from your equipment in this critical time.

More work and longer life from every machine is what both of you are shooting for in 1943. Keep in close touch with him and work out your problems together.

INTERNATIONAL HARVESTER COMPANY
180 North Michigan Avenue Chicago, Illinois

INTERNATIONAL Industrial Power



• American Telephone & Telegraph employs a Model 12 Buckeye trencher to bury overhead cable near a mid-west pilot training center.

usually urgent appeal to buy and use Christmas seals this year. Funds obtained from the sale of Christmas seals support the year around activities of the association. These associations do not receive any financial aid from any government unit, war chest or any other organization or drive.

Christmas seal funds fight on many fronts. Throughout the country they make possible tuberculin testing and X-raying programs in industries, schools and at city, county and sanatorium clinics; activities of nurses and social workers who ferret out active tuberculosis cases to stop the spread of infection; the offering of helping hands to those who having had the disease are trying to reestablish themselves in society without danger of a breakdown; assistance to private physicians in the reading of X-rays and educational media in dozens of forms.

Statisticians know that tuberculosis has increased during and following every war even in countries not invaded. In this war more factors are present than ever before to bring about such an increase. The strain of the all out effort of men, women and even children, congested living and working conditions and the migration of workers from states and areas having a higher tuberculosis death rate to those having a lower rate—all help to provide fertile fields for the germs.

Despite these health handicaps, there need be no increase of cases or deaths during this war. Science and education offer all the necessary armament to conquer the disease, but armament is futile if not employed. To keep this armament in action, buy and use Christmas seals.

'41 Cement Summary

Data on special cement production and markets during the past year, as reported to the Bureau of Mines, United States Department of the Interior, by producers, show the following:

High-Early-Strength Portland Cement. Production of this type of cement in the United States in 1941, totaled 6,063,638 barrels, and shipments from the mills 6,123,224 barrels valued at $11,443,792, an average of $1.87 per barrel. These figures represent the output of 90 of the portland-cement plants located as follows: One each in Georgia, Kentucky, Louisiana, Maine, Maryland, Montana, Nebraska, New Jersey, Oklahoma, West Virginia, and Wyoming; two each in Colorado, Idaho, Illinois, Missouri, Oregon, and Virginia; three each in Alabama and Tennessee; four each in Indiana and Iowa; five each in Kansas, Michigan, New York, and Washington; six in Ohio; seven in California; nine in Texas, and eleven in Pennsylvania. Corresponding data for 1940, which represent the output of 88 plants in 29 States are: Production, 4,478,797 barrels; shipments; 4,401,449 barrels valued at $8,243,315 an average of $1.87 per barrel.

Masonry Portland Cement. There were no data reported in the year 1941 for masonry cement of the Portland-cement class. Production in 1940, as reported by producers for 5 plants, totaled 219,480 barrels and shipments from the mills 214,303 barrels valued at $308,333, an average of $1.44 per barrel.

Masonry (other than Masonry-Portland and Masonry-Natural). In addition to the statistics of "Masonry-Portland" and "Masonry-Natural" reported to the Bureau of Mines, producers also report certain masonry cements that are hydraulic in character, but which are not true portlands although they employ portland-cement clinker and finished portland cement as a base. To this base are added considerable quantities of lime or other constituents of various kinds. These specially prepared masonry cements are sold under proprietary names. The output reported sold ordinarily in 256 to 300-pound barrels is here expressed in terms of 376-pound barrels to correspond with the figures of portland cement.

Production which was reported from 52 plants in 1941 amounted to 3,097,382 barrels and shipments 3,080,605 barrels valued at $4,636,497, an average of $1.51 per barrel. Corresponding data

"TAXIES"
for Hell Buggies
ARMY E NAVY
Tanks move doggedly forward wreaking havoc on the enemy but their speed is necessarily slower than trucks and their span of continuous service considerably more limited.
So they crawl up on Rogers Trailers and are moved quickly to the line of combat—or from it when repairs or reconditioning becomes necessary.
Thus, the effectiveness of an important combat unit is increased manifoldly by these non-combat vehicles.
ROGERS
LOW BED-
-HEAVY DUTY
TRAILERS
ROGERS BROTHERS CORP.
ALBION, PENNA.

for 1940 representing the output of 44 plants are: Production 2,312,155 barrels and shipments 2,260,636 barrels valued at $3,175,088, an average of $1.40 per barrel. As the finished portland cement and clinker used in making these types of masonry cement have been reported elsewhere by producers, to avoid duplication the above figures are not included in the totals.

The bureau is not at liberty to publish separately the figures on white portland cement or those on alumina cement, an hydraulic cement noted especially for its attainment of high strength at early periods.

Low- and Moderate-Heat-of-Hardening Portland Cement. Low- and moderate-heat cement, including Tenneseee Valley Authority Type B portland cement, produced in 1941, totaled 11,290,232 barrels and shipments 11,177,651 barrels valued at $14,963,940, an average of $1.34 per barrel. These figures represent the output of 58 plants. Corresponding data for 1940, which represent the output of 55 plants, are: Production 8,559,487 barrels, shipments from mills 7,709,503 barrels valued at $10,307,976, an average of $1.34 per barrel.

Portland-Puzzolan Cement. Portland-puzzolan, including those reported "High-Silica" cements, representing the produced output of 8 plants, in 1941 totaled 441,500 barrels and shipments from the mills 439,354 barrels valued at $632,713, an average of $1.44 per barrel. Corresponding data for 1940 are: Production 413,870 barrels, shipments from the mills 412,143 barrels valued at $552,830, an average of $1.34 per barrel. Represents output of 10 plants.

Oil-Well Portland Cement. Nineteen plants reported production in 1941 of 786,167 barrels and shipments of this variety amounted to 806,364 barrels valued at $1,550,301, an average of $1.92 per barrel. Corresponding data for 1940 for 22 plants, are: Production 711,348 barrels, shipments 719,022 barrels valued at $1,365,840, an average of $1.90 per barrel.

"Seabees" Seek Officers

Officer personnel for U. S. Navy construction battalions, a necessity in any war machine, must be filled at once from the ranks of men with supervisory field experience in construction, according to Capt. E. S. Root, director of Naval Officer Procurement in the Middle West.

Engineers, general superintendents, superintendents and their assistants, section chiefs and foremen with either road-bridge or building construction backgrounds are sought.

So acute is the need that such applicants are receiving special consideration at the Chicago office of Naval Officer Procurement, Board of Trade Building, and its branches.

Civil engineers top the list of officers wanted to head the battalions. But mechanical, electrical, sanitary and architectural engineers, who actually have been in the field on all kinds of construction projects, are needed equally as much.

Men with supervisory experience are especially desired. Applicants need not have college degrees, if their experience makes up for that lack.

Ranks open are those of warrant officer, ensign, lieutenant (jg), lieutenant and lieutenant-commander, to be determined in each case on a combined basis of age, education and experience. All applicants with field experience in construction, except in extreme cases of physical defect or other obvious disqualifications, will be considered. Age limits are 21 to 50, but older men in good physical condition may be considered.

Personal or written inquiries will be accepted by the Director of Naval Officer Procurement, Board of Trade Building, Chicago, or if more convenient, at any of these branch offices: 121 Old Federal Building, Des Moines, Ia.; ninth floor, Book Tower Building, Detroit, Mich.; Central Armory, Cleveland, O.; 429 North Pennsylvania Street, Indianapolis, Ind.; 202 Finance Building, Kansas City, Mo.; 633 North Fourth St., Milwaukee, Wis.; fourth floor, Roanoke Building, Minneapolis, Minn.; sixth floor, Missouri Pacific Building, St. Louis, Mo. and Kansas Hotel, Topeka, Kansas.

NOT in the *Contract*

A guest at a banquet took pains to make himself agreeable to a Chinese sitting next to him. Somewhat at a loss for small talk, he ventured, after the first course, to inquire, "Likee soupee?"

There was no reply, except a genial beam. After the next course he followed up his first opening with, "Likee fishee?" This evoked a more genial beam.

Later in the evening the visitor from the Far East responded to a toast in perfect English. On resuming his seat, he asked his discomfited neighbor, "Likee speechee?"

Hubby: "I miss the old cuspidor since it's gone."

Wifey: "You missed it before—that's why it's gone."

Well dressed man, cigar in hand, falling through the air from an airplane: "Gad! That wasn't the wash room after all."

Pete: "I'm going to get a divorce. My wife hasn't spoken to me in six months."

Al: "Better think it over. Wives like that are hard to find."

"Won't you give a shilling to the Lord?" said a Salvation Army girl, to an old Scotchman.

"How auld are ye, lassie?" he inquired.

"Nineteen, sir."

"Ah, weel, I'm past 75. I'll be seein' Him afore you, so I'll hand it to Him mysel'."

The keeper of the local inn, which had a reputation for its very strong brew, was awakened at midnight by a loud knocking on the front door. Putting his head out the window, he shouted:

"Go away! You can't have anything to drink at this hour."

"Who wants anything to drink?" was the response. "I left here at closing time without my crutches."

"Gosh, I wish I were a shovelrunner!"

WPB Doings

Two men worked side by side in a War Production Board office in Washington. They never spoke, but each watched the other. One man quit work daily at 4 o'clock. The other toiled on till 6 or later.

Some months passed. Then the harder working of the two approached the other.

"I beg your pardon," he said. "Do you mind telling me how you clean up your work every day at 4 o'clock?"

"Not at all," said the other man. "When I come to a tough piece of detail, I mark it, 'Refer to Commander Smith.' I figure that, in an outfit as large as this, there is sure to be a Commander Smith. And I must be right; none of those papers comes back to me."

The harder worker started to remove his coat.

"Brother," he said, "prepare for action. I'm Commander Smith."

"Who was that lady I seen you out with last night?"

"I wasn't out. I was just dozing."

Officer: "What's the big idea? What are you men doing climbing trees and crawling through the bushes?"

Private: "Well, Sir, we camouflaged the gun before lunch and now we can't find it."

Cutie: "Mister, don't you know that drinking will ruin your stomach?"

Gent: "So what? I always keep my coat buttoned."

A farmer took the pig to town and sold it. With the proceeds he bought a suit, a hat, a pair of shoes, and then he tucked the bundle under the seat and said: "Giddap, Oriole, let's get home and surprise my wife." On his way home he stopped at the river, took off all his old clothes and threw them in and they sunk. Then he looked under the seat for his new outfit. It was gone. So he got in the buggy and said, "Giddap, Oriole, we'll surprise her anyway."

"Billy! Billy!"

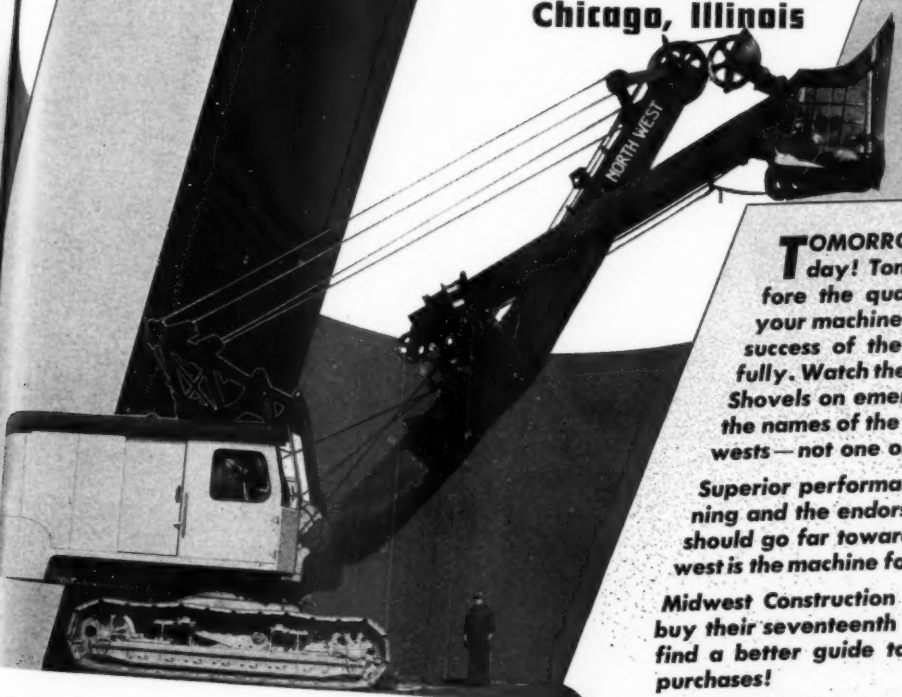
"What, ma?"

"Are you spitting in the fishbowl?"

"No, ma, but I'm coming pretty close!"

This makes the Seventeenth NORTHWEST for

MIDWEST CONSTRUCTION & ASPHALT CO.
Chicago, Illinois



TOMORROW is going to be another day! Tomorrow more than ever before the quality and performance of your machinery is going to influence the success of the contracts you bid successfully. Watch the performance of Northwest Rock Shovels on emergency contracts today. Check the names of the concerns that are buying Northwests—not one or two but again and again.

Superior performance, the ability to keep running and the endorsement of leading contractors should go far toward convincing you that Northwest is the machine for successful contracts tomorrow.

Midwest Construction and Asphalt Co., Chicago, buy their seventeenth Northwest! Where can you find a better guide to your future plans and purchases!

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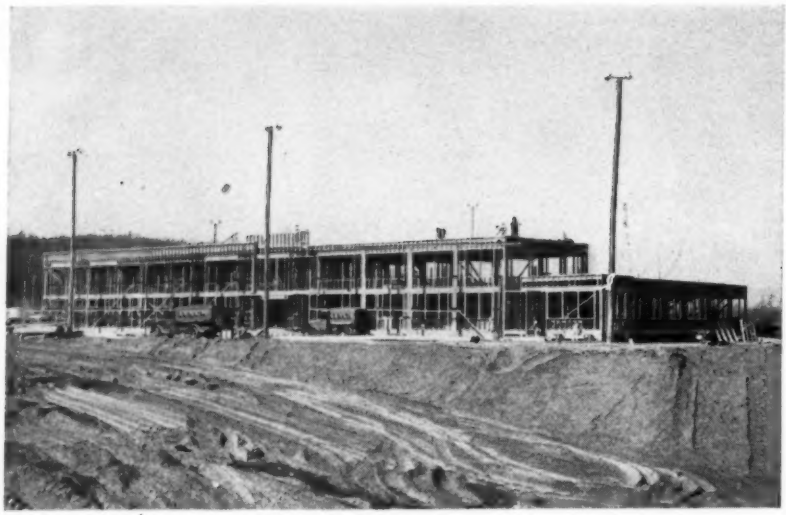


• Construction view of the main office building that was built after dry fill had been placed in the surrounding area.

Shipyards in a Hurry—By Kaiser

(Continued from page 599)

pany, Portland, laid 560,000 yards of asphalt paving, utilizing a Barber-Greene paving machine. R. O. Dail & Warren Construction Company, put in 160,000 yards of armor-coating, a gravel and oil surfacing.

Haugen directed the ditching and laying of approximately 50 miles of conduit water and sewer lines criss-crossing the immense yard. He used four Bucyrus-Erie 10-B dragshovels 24 hours a day, seven days a week from January 24 to April 1, without interruption or major repair, to do the job. Steel water pipes ranging from 15 inches to six inches, corrugated sheet storm sewers for drainage from 36 inches down, and concrete sewers were laid.

While the gravel was being removed, pipes laid and paving placed in portions of the yard, shipway skeletons were rising, buildings were going up and dredges were pumping in more fill in a synchronized bee-hive of activity. Keels were laid and ships were off the ways before the machinery of construction had left the yard.

Kaiser Company engineers looked forward to their easiest job when the city of Portland turned over its emerald-lawned Swan Island airport, lying below the swank residences of Portland's Mock Crest in an elbow of the Willamette river, to meet the great need of more and more ships. A new and larger airport had been constructed, leaving Swan Island the harbor of small commercial and private fliers, banned from the air since Pearl Harbor.

Swan Island Problem

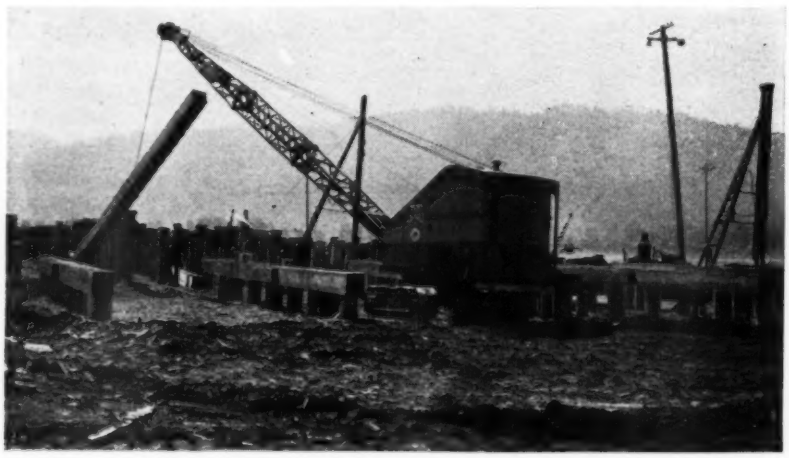
But Swan Island presented an unexpected problem.

Kuckenberg Construction Company moved its equipment in from Oregon Shipbuilding Corporation, March 16, 1942, and started excavating for the main office building and removing the western nose off the island for the eight shipways. Some 300,000 cubic yards of sand were taken from the nose of the island and used for a fill on the north side, back of the outfitting dock. About 20,000 yards were taken out for the huge general stores and personnel buildings, with tractors and scrapers.

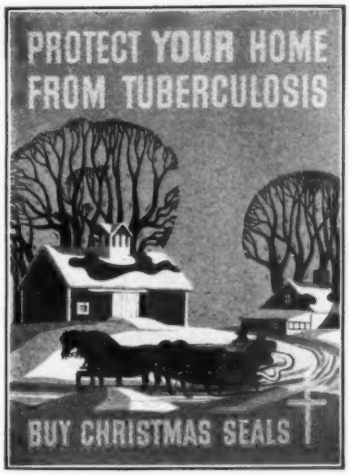
The price paid to Kuckenberg on the shipways excavation was 34 cents a cubic yard. His contract called for a 2,000-foot average freehaul, and there was no overhaul. The building excavation cost was lower, 27 cents a yard.

Swan Island was created by a channel dredging project in 1926, and in the years since the material stratified into layers of sand and wet clay. Kuckenberg hit a "wet spot" in the shipways excavation and had to pull back. The suction dredge Clackamas came in and removed the muck.

Principal trouble was encountered in excavating for the general stores building. The Kuckenberg organization ran into very wet clay, after taking off the top layer with tractors and scrapers. Rigging up a dragline on a truck crane, the company took out about 6,000 yards of such material. It was necesary to tile the entire basement area, then to refill with sand borrowed from the ways' excavation up to the subgrade of the basement floor, according to Bill Harlow, facilities engineer for



• Heavy timbers for pile driving operations at Kaiser's Swan Island shipyard are lined up by a Bucyrus-Erie 15-B. (Pacific Builder and Engineer Photo.)



Kaiser Company. A pump has been kept operating continuously since to carry away a small flow of water. Kuckenberg completed work May 9.

The dredge Clackamas took out 200,000 yards of wet excavation beyond Kuckenberg's reach before the eight shipways and deposited it for a parking area in Mock's bottom, across the deep slough on the north which now is the fitting basin.

The Clackamas also put in 600,000 yards of hydraulic fill from the river bottom at the south and west sides of the island. The Clackamas came on the job April 29, went to other war projects, returned and busied itself in completing the giant parking fill.

Gilpin Construction Company's dredge, Kentucky, deepened the outfitting basin in front of the future location of the outfitting dock, working for about three weeks starting May 7. The fill was for an access road, parking lot and the outfitting dock area. Total of cubic yards was about 150,000.

The first tanker keel was laid at Swan Island July 1, and the first launching was accomplished in October, despite bottlenecks of tools, materials and manpower. Kaiser's Vancouver yard already has produced Liberty freighters and is now launching a new type of vessel. Swan Island is using 10,000 workers, men and women. Vancouver has more than 15,000. Both yards need thousands more, and as this is written Kaiser's men are recruiting in New York and other eastern cities. Oregon Shipbuilding Corporation, the pacesetter with its 10-day Liberty ship launching, nears the 100-vessel mark in production, has 34,000 men and women working night and day—and needs more.

The Army Keeps 'Em Digging

(Continued from page 603)

SECOND JOB EXCEEDS THE ARMY USE IN IMPORTANCE. Frankly, John is in the middle on the rental deal, anyway, for if he permits his equipment to remain idle unreasonably long the army will requisition it. The answer seems to be, "Yes, rent your equipment and bid only on important jobs." A fine sense of values and delicate, balanced judgment are essential in connection with this question.

Recapture of machines purchased under a PD-3A rating will not be exercised unless the machines remain idle too long, or unless the owner will not rent or use his equipment on government projects. In any case, a fair appraisal will be made before recapturing any machine.

At this time, it is believed that the Associated General Contractors of America may also form a pool of privately owned equipment similar to the army pool, administered along the same lines and for the same purpose. Initial steps have already been taken. This marshalling of machines indicates that the contractors of America recognize that they must finish the tremendous job they have started, using the machines they have at hand.

Floodgate Installation Job

(Continued from page 605)

Although most of this flat marsh or prairie is only two to three feet above normal low tide, the new diversion channel and the flood gate building is all in the dry. The major part of this job is comprised of three operations . . . digging the channel portion to accommodate the flood gates, installing the flood gates and erecting the fender system.

Excavation work has been handled by three draglines: a Bucyrus-Erie 45-B equipped with a 70-foot boom and a 2-yard bucket; and two Northwests (a Model 8 and a Model 6) both equipped with

• Modern excavating and hauling equipment is being mobilized by the U. S. Army Engineers' equipment pool. This 2½-yard shovel is working on a Missouri state highway.

a 60-foot boom swinging 2-yard buckets. The Model 8 Northwest is a gasoline rig; the other draglines are diesel-powered.

Dirt moving is done with six 12-yard and two 8-yard Euclid wagons. Both gasoline and diesel powered towing units are used. Excavation work on this part of the job involves approximately 250,000 yards of dirt, or a cut about 800 feet along each side of each flood gate to a width of 75 feet. Dirt from the cut is spread by bulldozers, about 95,000 yards of it being used to build esplanades on which the permanent houses for the gate keepers will be erected, and the remainder of the dirt is spoiled in the dump areas adjacent to the property. An International TD-18, an International T-14 and a Model K Allis-Chalmers were used for necessary bulldozer work.

The flood gate building calls for concrete 15 feet minus to 12 feet plus at the top. Approximately 1,000 untreated 30 to 35-foot wood pilings are driven for each concrete flood gate foundation, and 30-foot standard steel sheeting is being used to prevent scouring. The pile driving is done with a Northwest No. 95 equipped with a Vulcan hammer.

Although very little water is encountered in this work, and the soil is mud and clay surface with an absence of rock at any depth, the job is not as easy as it sounds. About eight feet down, there is a 12 to 15-foot deposit of quicksand; and this quicksand is a heart-breaker for the pile driving foreman that is trying to maintain a reasonable schedule.

The 75 feet of concrete between the lock walls are being poured at the rate of 30 to 35 yards per hour. A batching plant has been installed on a spur track, six miles from the job. Here the 20 GMC 1½-ton dump trucks with two stations are loaded with the proper cement and sand. The batch is hauled to the job where a Koehring 27-E 1-yard concrete mixer is employed for the mixing. A Rex 27 cubic yard stationary mixer is also available as a standby unit.

Installing Fender System

Although this part of the contract calls for digging the canal for some 800 feet to either side of each flood gate, a fender system extends 380 feet on the land side and 373 feet on the river side. This fender system is made from wood piling and wood timbers. Beyond the fenders toward the main channel, the end flares into the channel. Here the cut is made on a slope of one foot rise to each two feet of slope.

This contract started in January, 1942, and was originally planned to be completed by September 1st; however, unavoidable delays on account of material shortages and transportation have delayed the job. The finishing date will be approximately January, 1943.

Three shifts are employed seven days a week. The entire plant is well lighted for night work and, to expedite work, the firm has a well equipped machine shop on the ground for all types of overhauling and repair work, doing both electric and acetylene welding. A carpenter shop for building the gate forms and other work is maintained on the premises.

A staff of government engineers also is stationed on the job which promises to be the final solution to the navigation problem first encountered more than a century ago. It is definitely known that the flood gates will control the silt flow from the gates to the old channel and eliminate much of the dredging of the canal. Whether or not there will be any silt deposits between the gates and the river remains to be seen and so far remains a controversial engineering question. Some engineers express the opinion that the diversion canal coming off from the old straight channel and intersecting the river at V angles will create an eddy which will keep this section of the channel free of silt deposit. Time alone will answer this question; but the flood gate job definitely answers the major problem.

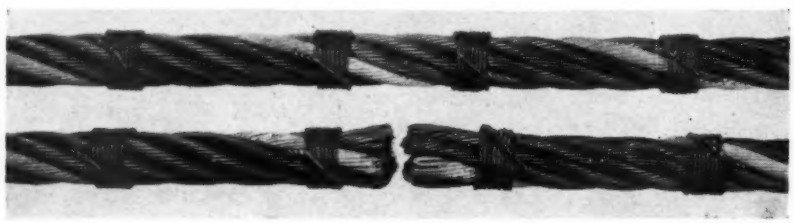
How to Get the Most from Your Wire Rope

(Continued from page 608)

their palms out for a share of your wire rope dollar if you don't look out.

There are a lot of places where the practical excavating man can keep his eyes peeled for other grafters who lie in ambush with outstretched palms. Any hard substance such as boulders, stones, iron rails, etc., can do a lot of damage to your wire rope dollar if your rope comes in contact with them. It only depends on how much unit pressure is present as to the extent of the damage to the rope and that also goes for undue stresses caused by over-load and shock. If that pressure or shock is high enough, I wouldn't give you two cents for the share these latter "hitch-hikers" leave to you.

Wire rope cost preventive No. 1 is to make the representative of your wire rope manufacturer earn his salt. He is there for you to use so be as frank with him as to the true symptoms of your equipment as you would be with your doctor. That's what he is there for and you are not getting the most out of your wire rope dollar unless you give him a fair opportunity to serve you.



• Although it only takes a minute or two to seize wire rope properly, this operation is a primary necessity for holding the lay of the rope.

Field Notes

(*Continued from page 612*)

the plaintiff dealt with the city * * * at its peril as to all parts of the public improvements done without first complying with the provisions of its city charter. * * * We therefore recommend that the judgment of the lower court be affirmed. It is so ordered." (38 P. 2d 536)

So much for the foregoing case, and now let us take another of this kind that arose under similar facts.

Here the plaintiff entered into a highway contract with a county. This contract, among other things, provided that the plaintiff should be paid $3.00 per cubic yard for certain excavating in connection with the contract.

During the progress of the work, the county commissioners decided that it would be a good time to straighten out certain curves in that section of the highway. With this in mind, the commissioners directed the plaintiff to do the excavating in connection with the elimination of the curves, at the excavation price of the original contract, namely, $3.00 per yard.

So, without bothering to advertise this extra work for bids as was required by the law, the plaintiff went ahead and performed the work. Here too, both the commissioners and the plaintiff it appears thought this extra work could be "tacked" to the original contract. The price of the work was a little over $14,000. When completed plaintiff was denied payment. Suit followed, and in holding plaintiff could not recover, the court, among other things, said:

"The excavation for the elimination of curves, while a proper improvement, was entirely outside the original contract, for neither therein, nor in the accompanying plans and specifications, was there any reference to such excavation. * * * No reason appears why the excavation in the elimination of curves should not have been advertised and let as a separate contract. * * *

"He who deals with a municipality must recognize that it cannot contract only upon such terms as the legislature has seen fit to prescribe. * * * A law requiring municipal work to be advertised and given to the lowest responsible bidder is mandatory, and the municipality's liability depends upon compliance therewith. * * * It follows that the county * * * is not liable for the excavation in question." (129 Atl. 635)

In the light of the facts and holdings of the foregoing cases, they constitute striking illustrations of the importance to contractors of care in "tacking" contracts when dealing with municipalities. For here, the latter are usually governed by charters or statute in letting contracts, and unless the requirements laid down are complied with, a contractor may be placed in a difficult position to recover for work performed.

Consequently, when a contractor is awarded a public works contract, in accordance with charter or statutory requirements, he may well be on his guard in performing extra work thereunder, in the absence of assurance that the work falls within the coverage of his contract. An important point this; and as examples of the possible cost to a contractor in overlooking it, the cases reviewed should be kept in mind.—*Leslie Childs*

LET'S Do Some Figuring

344,966,000 POUNDS ★

5% LONGER LIFE

17,248,300 STEEL SAVED

+ the Man-hours required to make 17,248,300 lbs. of wire rope

NOW... Let's see what that means

344,966,000 pounds of wire rope were produced in 1941. If (by better use and care) its life could be increased a mere five per cent, it would result in a saving of approximately 17,248,300 pounds of steel—which would be sufficient to make:

1,277,652 3" Shells . . 172,483 50-calibre Machine Guns . . 8,624 4-ton "Block Busters" . . 1,437 3" Anti-Aircraft Guns.

While ideal working conditions are not always possible, the five per cent saving suggested in our example is a minimum of what might be expected with a little *additional* care. Let us help you get maximum "mileage" out of the wire rope you are now using. A copy of our 44-page illustrated booklet, "Practical Information on the Use and Care of Wire Rope," is yours for the asking, and our experienced Engineering Department is always at your service.

★ This is the quantity of wire rope produced in 1941 only. If this longer life—a mere five per cent—could be obtained from all wire rope now in use, the steel saving would be much greater.

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HERCULES WIRE ROPE

Notes from the manufacturers

Bucyrus-Erie Company's South Milwaukee, Wisconsin, plant was presented the Army-Navy "E", Saturday, Nov. 7th, for accomplishments "above and beyond the call of duty." The presentation of the "E" flag was made by Brig. Gen. G. M. Barnes, U. S. Army Ordnance Department and lapel pins were awarded to employees by Capt. D. D. Dupree, U. S. Navy. The award was made in a formal ceremony at the South Milwaukee plant.

This Picture Shows a Small Sauerman Scraper Reclaiming Coal Mine Screenings from Waste Pile to Washing Plant.

How to Reduce Cost of Dig-and-Haul Work

On work where materials are to be moved a distance beyond the reach of a boom, a Sauerman Scraper or Cableway has an advantage over other equipment because it is able to dig, haul and place the material in a continuous, straightline operation.

The Sauerman Catalog shows the many ways of cutting costs on material-handling work with these machines.

Write for a copy of this free book.

SAUERMAN BROS., INC.
574 S. Clinton St., Chicago

SAUERMAN
LONG RANGE MACHINES

Metallizing Engineering Company, Inc., Long Island City, New York, announces a contest in the interests of industrial conservation and to help speed war production, offering a total of $650 in war bonds as prizes. The contest is based on supplying detailed information of maintenance and salvage procedures with the metal operating process. Complete information and entry forms obtainable from Metco News, 21-07 41st Avenue, Long Island City, New York.

B. F. Goodrich Company, Akron, Ohio, announces that D. W. Fairbairn has been named district manager of the national sales and service division of the Pacific coast area. Headquarters of the new district will be in Los Angeles. Mr. Fairbairn is a member of the Society of Automotive Engineers.

Chicago Pneumatic Tool Company, New York, New York, announces the appointment of E. P. Barry as coordinator of plants. Mr. Barry will supervise machine equipment, tool designing, and production methods for the four plants of the company located at Detroit, Cleveland, Franklin, Pa., and Garfield, N. J.

Westinghouse Electric and Manufacturing Company, East Pittsburgh, Pennsylvania, announces that H. V. Putman, manager of the company's transformer division, has been elected a vice president by the board of directors.

Sauerman Brothers, Inc., Chicago, Illinois, announces the appointment of J. R. Norton, 11 West 42nd Street, New York, New York, as distributor to succeed W. R. Elden who died recently. Mr. Norton is well known to the buyers of construction and mining machinery in the New York district, having maintained a sales office there for a number of years.

New trade literature

Title: American Highway Practice, Vol. II

Subject: This book is a comprehensive treatment of rural highway survey, design and construction practice in the U. S. at present. Current methods in cooperative road building by state highway departments and the Public Roads Administration on the federal-aid highway system are also covered. In presenting modern methods in construction, considerable attention has been given to the origin and historical development. This is the second of two volumes dealing with highway methods.

Where to Get: John Wiley & Sons, New York City. Price $4.

Title: Highway Research Board, Vol. 21, 1941.

Subject: Proceedings of the 21st annual meeting of the Highway Research Board, held at the Johns Hopkins University, Baltimore, Md., December 2-5, 1941. The book consists of a group of technical reports by various experts and scientists in the field of highway research, including the departments of finance, economics, design, materials and construction, maintenance, traffic and safety, and soils.

Where to Get: Division of Engineering and Industrial Research, National Research Council, Washington, D. C.

Title: "Lincoln Weldirectory."

Subject: A well prepared bulletin with catalog covering many phases of welding with Lincoln Electric welding equipment. The bulletin contains many illustrations of methods and applications in its 56 pages.

Where to Get: Lincoln Electric Company, Cleveland, Ohio. Ask for bulletin 402. Free upon request.

HAYWARD BUCKETS

WON'T QUIT OR CAUSE TIME OUT

A Hayward Bucket keeps the job going ahead on scheduled time. It won't quit or cause time out.

THE HAYWARD COMPANY
52-54 Church Street
New York, N. Y.

NEED A BIG Trailer?

La Crosse Makes Them Up To 200 Ton Capacity

WRITE OR WIRE

LA CROSSE TRAILER & EQUIPT. CO.
LA CROSSE, WISCONSIN U.S.A.

Title: "Priorities and Industry"

Subject: A detailed explanation of the effect of priorities on industry, discussing the control of materials and how to get priorities assistance. Subsubjects deal with production requirements, individual ratings, limited blanket ratings, construction and housing requirements, wholesalers, and also what you should do to obtain priorities assistance.

Where to Get: Division of Information, War Production Board, Washington, D. C.

Title: "The New Weapon Against Fire"

Subject: A large bulletin illustrating tests and advantages of a new fire retarden solution "Firepel."

Where to Get: Albi Chemical Company, 9 Park Place, New York City. Free upon request.

Title: "Transportation Shortages Affect Asphalt Pavement Design"

Subject: A timely publication, this booklet shows how redesign of pavement structures may be made without sacrificing the advantages in normal asphalt construction procedure. Included also in this publication are the jointly developed specifications for constructing mechanically stablized and prime coated sub-base for asphalt pavements or surface treatments.

Where to Get. Asphalt Institute, 801 Second Avenue, New York, New York. Free upon request.

Title: "Rubber Guide Book"

Subject: A 30-page booklet listing the application and properties of many types of products for industrial and aeronautical purposes using natural, synthetic or reclaimed rubber. Well illustrated throughout, the booklet is divided into 11 indexed sections. The booklet is designed to give maximum information in easily accessible condensed form.

Where to Get: B. F. Goodrich Company, Akron, Ohio. Free upon request.

Title: "Equipment for Quarries and Contractors"

Subject: A little pocket-size booklet containing 72 illustrations and numerous data on rock drills, detachable bits, reconditioning equipment, hose lines, hoists, pumps and air compressors. The language in which the booklet is written is entirely nontechnical, and the reader will find many hints that may help save time and labor.

Where to Get: Ingersoll-Rand Company, 11 Broadway, New York City. Ask for Form 2427-C; free upon request.

POSITIONS WANTED

Address all box numbers c/o EXCAVATING ENGINEER South Milwaukee, Wis.

Operate any steam or electric dredge or shovel. In good health—over draft limit—no dependents—go anywhere. 40 years experience at stripping, dredging, and construction work. Box 9195

STEAM SHOVEL OPERATOR

Thirty-six year old operator, in good health, desires permanent position on shovel. Married; 4 children school age. Classification 3-A. Have operated 50-B and 70-B steamers, but can learn rapidly and feels confident of operating shovel of any type of power up to 2 yards. Good mechanic. Can make own reairs. Willing to go anywhere in U.S.A. for right connection. Now located near Iron Mountain, Mich. Box 9200

TO ADVERTISE: All advertising in this section is payable in advance. Rate: 60c per line, or $7.20 per inch of 12 lines. Minimum charge $2.40. No discounts; no commissions. If no change in copy is desired, three continuous insertions are offered for the price of two. Read these instructions carefully. Each line contains 41 characters (34 characters if all capital letters are used). Count spaces and punctuation as one character each. Allow 10 characters for box number, if blind advertisement is desired. Count your own copy to save delay. Be sure to enclose the correct amount of money with your order. Closing date—15th of preceding month. Example: January issue closes December 15th.

TO INQUIRE: Be sure to address your inquiry to the advertiser by using the correct box number. Mail your letter in care of Excavating Engineer, South Milwaukee, Wisconsin. Write each advertiser a separate letter. Do not write us for name and address of advertiser. This information will not be given out. We have no information about the equipment advertised other than that shown in the advertisements themselves.

MARION MODEL 37 steam shovel crawler mounting, 32' boom also 50' crane boom and clamshell bucket. Steel cab, good condition, central location. Box 2934

INSLEY excavator shovel Type C ⅜ yard. Buda gasoline engine, ¾ swing, field reconditioned $2,500. F.O.B. Write P.O. Box 62, Enid, Oklahoma.

THREE MARION MODEL 125 3 yard electric shovels in A-1 condition. Suitable for power supply of 3 phase 60 cycle 2300 volts and 3 phase 60 cycle 4000 volts. General Electric equipment. Located Minnesota. Box 2935

BUCYRUS-ERIE Class 230 150' boom steam dragline. Wheel trucks. Good working condition. Located Mississippi. Box 2933

MARION 7200 Diesel powered walking dragline. 100-foot boom. 5 cu. yd. bucket. Only two years old. Located California. Box 2906

QUARRY SHOVELS

TWO 4-YARD full revolving electric quarry shovels. Now operating. Can be inspected. Available promptly. Midwest. Box 2918

30-B STEAM CRANE with 35' boom. Shovel equipment also. Located Texas. Box 2931

FOR SALE

MARION MODEL 125 electric shovel, crawler mounted. 55' boom, 36' handle. 2½-yard bucket. For power supply 3 phase. 60 cycle. 2300 volts. Box 2854

50-B STEAMER with long boom and 21'6" dipper handles in good operating condition. Boiler completely overhauled recently. Equipped with 1½ yd. Dipper. Located Texas. Box 2929

STRIPPER AND LOADER

225-B BUCYRUS-ERIE steam stripper truck mounted, in excellent condition. 80-ft. boom, 54-ft. sticks, 6 or 8 yd. bucket. 50-B rebuilt 2-yd. loader. Extra parts for both machines. Sell or lease to responsible parties. Box 2911

CLASS 14 electric dragline with 100' boom. 2 yd. bucket, 2300 volts, 60 cycles, 3 phase. In good working condition; operating every day. Located Texas. box 2930

COAL STRIPPING UNIT

200-B BUCYRUS-ERIE steam stripper mounted on caterpillars. 75-ft. boom, 60-ft. sticks, 6-yd. capacity. This machine new 1936. 50-B rebuilt loader, steam power, 30-ft. boom, 22-ft. sticks, 2-yd. bucket. Sell or will lease to financially responsible parties. Box 2910

Buckeye Model EH 2-drum hoist with adaptor for International "40" series tractors.

Bucyrus-Erie Model H-44 2-wheeled Scraper. Excellent condition, complete with pump and adaptor for International "14" series tractors. Missouri-Illinois Tractor & Equipment Co., 510 Withers—St. Louis, Missouri.

FOR SALE—Used Bucyrus-Erie Model H-44 Scraper. Bargain Price. Condition excellent. Tires good. Inquire. Box 2902

One M-51 4½ yd. Bucyrus-Erie 4-Wheel Scraper, complete with 6—9:00x20 ten ply tires in good condition, and MV-15 Bucyrus-Erie single drum Winch and adaptor for use with TD-40 International TracTracTor.

One P-14 Winch for above Scraper for use with a TD-14 International TracTracTor.
Box 2903

MISCELLANEOUS EQUIPT.

DIPPERS

⅜ cu. yd.—10-B—Drag shovel dipper
½ cu. yd.—16-B—Drag shovel dipper
½ cu. yd—18-B—Skimmer scoop dipper
⅝ cu. yd.—20-B—Shovel dipper
¾ cu. yd.—20-B—Drag shovel dipper
1¼ cu. yd.—38-B—Shovel dipper
1¼ cu. yd.—GA-3—Shovel dipper
1¼ cu. yd.—(41-B / 42-B / E-2)—Shovel dipper
1½ cu. yd.—(41-B / 42-B / E-2)—Shovel dipper
2 cu. yd.—75-B—Shovel dipper
2½ cu. yd.—50-B—Shovel dipper
2½ cu. yd.—75-B—Shovel dipper
3½ cu. yd.—75-B—Coal dipper
5 cu. yd.—120-B—Shovel dipper (used)
6 cu. yd.—(200-B / 225-B / 320-B)—Shovel dipper
8 cu. yd.—820-B—Shovel dipper (used)

"FOR BUCYRUS-ERIE EXCAVATORS ONLY."

PARTS DEPARTMENT
Bucyrus-Erie Company
South Milwaukee, Wis.

WORK FOR DRAGLINE
BUSINESS OPPORTUNITY

A good proposition available to a party with 6 to 10 yard, 125 ft. boom dragline. Replies respectfully solicited. Box 2924

FOR SALE—Special Electric Tower Excavator equipped with grizzly and crusher for shaft and underground belt disposal. Head Tower on flanged wheels and rails, and arranged for full rotation. Tail tower on caterpillars for operation at 700' radius at any point within a circle. Electrical equipment 3 phase, 60 cycle, 2300 volts Ward-Leonard with 200 hp introduction motor. Box 2878

For Sale
Surplus Equipment

1—60 ft. dragline boom built for use with 43-B diesel Bucyrus shovel. Practically new.

1—Dragline bucket for use with above. Depth 34 in. Width 52 in. from cutting lip to back of rounded plate 60 inc. Good condition. Box 2896

BUCYRUS-ERIE 17-B Shovel equipment. Practically new. Will also fit 19-B. Located Texas. Box 2919

WAGONS—PIPE—CENTRIFUGAL PUMP

Five 8-10 yard bottom-dump Euclid wagons powered by 150 H.P. Cummins diesel engines; fair mechanical condition; extra repairs and tires; available Dec. 1st. Also about 5000 ft. of 8" water pipe with dresser couplings. An 8" 2-stage centrifugal pump, 1000-gal. cap., 850-ft. head, directly connected to 125 H.P. induction-type electric motor (3600-volt, 3-phase, 60-cycle) complete with starter box, etc. Birch-McLaughlin, P.O. Box 1071, Great Falls, Montana.

TRANSITS FOR RENT. ANY OR ALL OF 6 ENGINEER'S TRANSITS. USED, GOOD CONDITION. Box 2927

ARMSTRONG 50-BE electric blast hole drill, 3 phase, 60 cycle, 440 volt, steel frame, wheel mounted, self-propelling. Steel derrick with shock absorber for wire line. Good operating condition. Price without tools $1200.00 cash, F.O.B. Central Tennessee. Box 2928

STEEL DERRICK

Clyde, Steel, Stiff Leg Derrick, 80' boom, 40' mast, 16' bull-wheel. 3 line for clam-shell. 10-30 tons; very good condition.
J. H. Berkebile & Sons
Toledo, Ohio

FOR SALE

One Keystone ½ yd. backhoe, 3 bulldozer blades will fit RD 7, D8-D4; parts for 40 & 55 Cletrac tractors; 5 comp hydraulic dumps, 1 yd. clamshell bucket, 3 Euclid 1½ yd. scrapers good condition. $150 each. Sol, 95 Flat Shoal Ave., Atlanta, Georgia.

NEW ENGINES FOR SALE

2—Hercules First Altitude Gas Engine—Model "WXC-3"—6 cylinders—4¼" bore x 4½" stroke—75 H.P. @ 1575 R.P.M. idling speed.
4—Hercules Second Altitude Gas Engine—Model "WCX-3"—6 cylinders—4¼" bore x 4½" stroke—75 H.P. @ 1575 R.P.M. idling speed.
4—Wisconsin Gasoline Engine—Model "M-4-A"—6 cylinders—5¼" bore x 6" stroke—117 H.P. @ 1230 R.P.M. idling speed.
Further information will be gladly furnished upon request.
Write — Telephone — Wire
Parts Department
Bucyrus-Erie Company
South Milwaukee, Wisconsin

Car Transporter

STACKER TYPE MACHINE consisting of self-propelled caterpillar mounted, inclined bridge on which 3-cubic yard material transporting car travels and dumps automatically at a distance approximately 145' horizontally and 80' vertically from loading point. Machine in good condition and priced to sell. Operates on 60-cycle, 3-phase, 2300 volts. Further information on request.
Box 2918

ROCK DIPPER BARGAIN

2 yard dipper with new front, new bail lugs, new side plates, and is in A1 condition. This is a heavy rock dipper complete with bail but without bail pins or tooth bases.
Box 2932

DRAGLINE BUCKET BARGAINS

1 cu. yd. Type AU Beco 1850 lbs.—Rebuilt
2 cu. yd. Type AU Beco 3500 lbs.—New
3½ cu. yd. Type AU-AX Beco 6400 lbs. Used
4 cu. yd. Type AU Beco 6850 lbs.—New
4 cu. yd. Type Y Beco 11,500 lbs.—Used
7 cu. yd. Type W Monighan 13,700 lbs.—New
Parts Department
Bucyrus-Erie Company,
South Milwaukee, Wisconsin

LOCOMOTIVE

40-TON VULCAN Saddle Tank Locomotive. Standard gauge. A.S.M.E. boiler good for 190 lbs. Rebuilt and ready to go.
MACKINTOSH ENGINEERING CO.
2907 Library Avenue, Cleveland, Ohio.

STEEL HULL DIPPER DREDGE

One and one-half yard Diesel Electric Equipped with Fairbanks-Morse full diesel Engine and Generator. All electric hoist swing and spuds. This machine has had only a few months use and hull and machinery are like new. Cash or terms to responsible buyer.
Bryan and Holloway Inc., Belle Glade, Fla.

FOR IMMEDIATE RENTAL—FOUR TO SIX MONTHS

1 Caterpillar "75" Tractor
1 Caterpillar D7 Tractor
1 Caterpillar RD 8 Tractor
2 Caterpillar D 8 Tractor
3 12-18 yard LeTourneau Scrapers
1 9-12 yard LeTourneau Scraper
1 LaPlant- Choate Sheepsfoot Roller
1 Caterpillar 12 foot Motor Grader
1 Caterpillar D-4 Angledozer
1 Caterpillar D-7 Angledozer
1 TD 14 International Tractor
1 Caterpillar 1500 Light Plant
1¾ yd. General shovel or crane
1½ yd. Insley shovel with attachments

Frowine Construction Corp.
821 Prospect St., Portsmouth, Ohio

SURPLUS MINE EQUIPMENT
BARGAIN PRICES

Write for prices of this equipment. Save money. Located in Minnesota.

1—Motor, 135 H.P. squirrel cage, 1150 r.p.m., 220 v., 3 ph., 60 cy., A. C.; compensator.

3—Rotary converters, 300 Kw., HCC-6-800-1200. Forms P, D, & V, 6 and 3 phase.

1—Switchgear for 3-phase rotary converter, complete, semi-automatic.

3—Transformers, 300 Kw., 66,000 V. Primary, reconnected for 22,000 V. Primary.

1—Ainley placer gold machine, complete. 1-bowl with feed hopper for dragline operation. 40-50 tons per hour.

3—Pumps, steam (1 gas engine driven) from 49 to 3700 g.p.m.
Box 2917

WANTED

WANTED

Shovel front and dipper stick attachment for No. 4 1 yd. Northwest Crane No. 3445. Want to rent one gas or diesel shovel ¾ to 1¼ yd., 4 to 6 months.
Want to rent one 8 to 10 ton, 3 wheel, gas or diesel roller.
Want to rent one Cat. D-6, D-7 or D-8 with scoop or pan or its equivalent. Box 2923

WANTED

One T-40 International tractor transmission housing. Sol, 95 Flat Shoal Ave., Atlanta, Georgia.

WANTED

In market for trencher that will make width of at least 12"; and Caterpillar with side-boom, back filler and other type equipment making one unit for pipe lines.
JOS. GREENSPON'S SON PIPE CORP.
National Stock Yards (St. Clair County), Ill.

WANTED

Shovel equipment for 50-B diesel draglines. Write complete description including price. Box 2922

WANTED

Trench Hoe attachment for Bucyrus-Erie 1030. Please give price and full particulars.
Box 2926

Cushioned Air Saves Wear

INGERSOLL-RAND

THAT'S WHY I-R CC-60 and CC-80

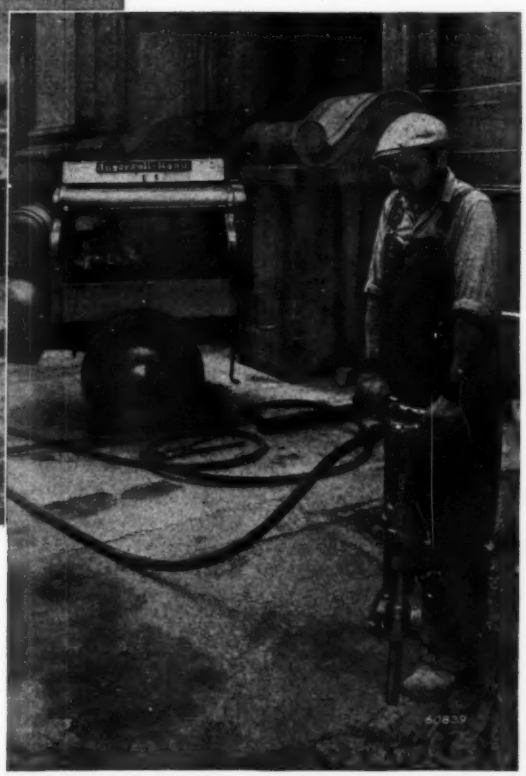
PAVING BREAKERS

Work Faster-Last Longer

The "Cushioned-Air" feature in the Ingersoll-Rand CC-60 and CC-80 Paving Breakers prevents the piston from hitting the fronthead. There is less shock to all parts—less breakage—less upkeep.

This protection of the parts by "Cushioned-Air" also means that more power is packed into these machines. That's why CC-60 and CC-80 Paving Breakers will do the work faster and stand up longer.

Today, metals are scarce and must be conserved in every way possible for the war effort. Yet street repair, gas, water, sewer main and factory maintenance must go on. The machines that do these jobs must give long, dependable service with the lowest possible upkeep. That's why many contractors, utilities and factory superintendents are turning to these "Cushioned-Air" Paving Breakers so that their essential work can be done rapidly, without trouble, and at low cost.



***Above**—The 83-pound CC-80 "Cushioned-Air" Paving Breaker at work. It is widely used in contracting, quarrying, maintenance and demolition work. Pile-driving frontheads for 2, 2½, and 3-inch wooden sheet piling are also available.*

KEEP 'EM RUNNING!

Ask your supplier for oil meeting I-R Specification 433 — the new rock drill lubricant developed by Ingersoll-Rand.

***Left**—The CC-60 "Cushioned-Air" Paving Breaker (60 pounds) is ideal for breaking brick and concrete walls or floors where it is not feasible to use a heavier tool.*

The D-60 Mobil-Air compressor supplies 60 cu ft of air per minute at 100 lb pressure. It is a compact, lightweight, extremely portable unit ideally suited for emergency work and scattered small jobs. It will operate a single Paving Breaker or light Jackhamer or at least two smaller tools such as I-R clay diggers, wood-borers, backfill tampers, riveters and chippers.

Atlanta, Birmingham, Boston, Buffalo, Butte, Chicago, Cincinnati, Cleveland, Dallas, Denver, Detroit, Duluth, El Paso, Hartford, Houston, Kansas City, Knoxville, Los Angeles, Newark, New Orleans, New York, Philadelphia, Picher, Pittsburgh, Pottsville, Salt Lake City, San Francisco, Scranton, Seattle, St. Louis, Tulsa, Washington

Ingersoll-Rand

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Branches or Distributors in other Principal cities the world over.

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5-144

ACCURATE CONTROL *for* LONG BOOM OPERATION

INDEPENDENT BOOM CONTROL

Boom raising and lowering when swinging or traveling is an important time-saving advantage when setting or stripping forms. Koehring Cranes have stability for long boom operation, accurate and positive control for spotting forms, steel, concrete buckets or any other material handling operation. Collapsible gantry frame, power controlled, saves time moving in "tight" quarters. Koehring Cranes can be equipped with adjustable jib boom, power controlled and power boom lowering device when required.

KOEHRING COMPANY • *Milwaukee, Wis.*

KOEHRING HEAVY DUTY

HEAVY-DUTY CONSTRUCTION EQUIPMENT

A BUCYRUS-ERIE SCRAPER

ARMY E NAVY
BUCYRUS ERIE

OR 35 - 45 H. P.
RACTORS . . . .

S-45

Capacity
cu. yds. struck
cu. yds. heaped

FOR 70 - 95 H. P.
TRACTORS . . . .

S-112

Capacity
10 cu. yds. struck
12½ cu. yds. heaped

OR 45 - 55 H. P.
RACTORS . . . .

S-67

Capacity
cu. yds. struck
cu. yds. heaped

FOR 95 H. P. AND
LARGER TRACTORS

S-152

Capacity
13½ cu. yds. struck
17 cu. yds. heaped

OR 65 - 75 H. P.
RACTORS . . . .

S-90

Capacity
cu. yds. struck
cu. yds. heaped

The many features which contribute to the ease of operation of Bucyrus-Erie Scrapers will protect your tractor and contribute to its long life and low maintenance on tough high-speed war dirt-moving jobs.

)NAL TRACTRACTOR DISTRIBUTOR

AT BATAAN

Pardon the interruption, mister—
But . . .
Help me do a job—help me bomb the Japs—
Will you?

I was at Bataan, Corregidor—
Fever . . . wounded . . . sent back home.
Two weeks more—I'll be back
On active duty—Orient again maybe.
But send me back happy—will you?

I want you and everyone in America
To sign your name in a long list—
A long, long list—at the end
Of a very short letter
To a quaking little Mikado in Tokyo.
Look—the letter would say this:

"Listen, you son of a fake heaven . . .
"America's big and plenty tough.
"From East to West, and North to South . . .
"We're a lot of people.
"And we're *riled* and bent on *action.*
"Each of us listed on this
"Big roll of paper—has paid for a bomb
"By buying a bond.
"The bombs are being sent—
"Thousands of them—under separate cover
"Blessed and sped onward by us
"To some slavish munitions plant of yours.
"Just wait Mr. sorry little Mikado,
"When America sinks her teeth
"Into a necessary job
"And sails in—*you* get action."

How do you like it Mister—*and* Mrs.?
Your name and mine—thousands of our names
Signed to that letter—
And sent via the Swiss—to the Mikado!
How about it?

Listen Mister—when I left Bataan
And then Corregidor, I left years
Of my life there.
All compressed into a blasted
Twenty weeks of hell and exhaustion.
I'm going back—and I'd like to tell . . .
Well . . . *all* the boys I see over there,
That Uncle Sam's sore as hell—
And taking the bombing of Tokyo on
As a personal score to settle—
Do you like it Mister? Will you join me?

★ ★ ★

GET IN ON THIS—WILL YOU? When Doolittle returns to Tokyo—know you're represented! Every bond, big or little, can pay for a big or little bomb. Go into any post office, store or theater where Stamps and Bonds are sold—good War Stamps and War Bonds—lay down your money, and buy your share of that ammunition!

EXCAVATING ENGINEER

Illustration and copy adapted from one of a series of five War Bond advertisements sponsored by the Chicago Retail Merchants Association.

NOW— without priority

Repairing the latch on a shovel dipper by welding.

The battered side of this "cat wagon" is put back in shape with P&H electrodes.

Worn out gears can be rebuilt to last longer than originally with P&H "Harcote" electrodes.

ALLOY ELECTRODES FOR MAINTENANCE AND REPAIR

Of course, war production comes first! But America's construction and mining equipment must be kept on the job. Arc welding is the answer. That's why the U. S. Government (through Limitations Order No. 146) makes it possible for you to secure, *without priority*, the welding electrodes necessary for maintenance and repair work.

Our fullest cooperation makes available a limited percentage of our production of P&H Alloy Electrodes for this purpose. These include such indispensable electrodes as P&H "Harcote" for hard-surfacing to resist wear and give new life to many parts. Other electrodes are available to answer every need for resisting wear, abrasion, and impact; for welding stainless steels, 4-6% chrome steel, etc. The only restriction is that they must be used for maintenance and repair.

P&H FOR ALLOY ELECTRODES

How To Order

Write us; we will send you information on how to obtain P&H Alloy Electrodes, also data sheets on how to select and use them.

General Offices: 4517 West National Avenue, Milwaukee, Wisconsin

E

Awarded the Navy "E" for excellence in war production, P&H displays it also as a pledge of future effort.

HARNISCHFEGER CORPORATION

WELDING ELECTRODES • MOTORS • HOISTS P&H ELECTRIC CRANES • ARC WELDERS • EXCAVATORS

Canadian Distribution: The Canadian Fairbanks-Morse Company, Ltd.

WIRE ROPE *Conservation Bulletins*

SENT ON REQUEST

We pause in this series of informative articles for wire rope users to review briefly the 12 thus far published . . . and provide an opportunity for those who may not have seen them to obtain reprints.

The purpose of this series of single-page illustrated articles on wire rope conservation is to help you conserve your wire ropes. This helps you, and helps our country for it means conservation of steel. We shall be glad to send you any or all of the articles listed below which readers tell us are useful and helpful.

1 ***Why Corrosion Shortens the Life of Wire Rope.*** Tells cause, effect, and suggests remedy for corrosion. Also explains how proper lubrication helps wire rope stand up against elements.

2 ***How Sheave Materials Affect Wire Rope Service.*** Pictures effect of hard and soft sheaves on wire rope. Explains what to watch for, how to avoid rope and sheave damage.

3 ***How You Can Lengthen Wire Rope Life by Proper Sheave Maintenance.*** Includes handy reference table on groove tolerances. Also points out 3 ways to save wire rope dollars.

4 ***The Importance of an Adequate Safety Factor.*** What is it? How Found? When is wire rope overloaded? What are minimum safety factors for various loads? All are answered in this easy-to-read, informative article.

5 ***How Thorough Lubrication Lengthens Service Life of Wire Rope.*** Explains two lubricating methods. Shows effect (Pictures) of ropes left unprotected.

6 ***Correct Rope Reeving Saves Wire Rope Dollars.*** Discusses fleet angles, reverse bends, rope spooling and what to do about them.

7 ***Regular Inspection Saves Wire Rope Dollars.*** Lists 6 common causes of wire rope failure. All can be avoided if rope user follows simple inspection procedure suggested.

8 ***Select the Correct Wire Rope for Your Equipment—Save Time and Money.*** Explains how Flexibility, Abrasion Resistance, and Strength are determined to meet varying conditions of Bending Fatigue, Abrasive Wear, and Loading Stress.

9 ***3 Ways to Make Your Wire Rope Dollar Go Farther—Conserve Steel Tonnage Too.*** Especially valuable to men actually handling wire rope.

10 ***Corrosion in Wire Rope.*** Gives further information on how to combat this rope destroyer. Supplements informative article number 1.

11 ***Protecting Wire Rope Against Corrosion.*** Shows some results of forgetting to inspect and protect wire rope with proper lubrication.

12 ***Practical Methods of Lubricating Your Wire Rope.*** Illustrates simple ways to lubricate your wire rope on the job. Very practical, useful for everyone concerned with wire rope care.

MACWHYTE COMPANY Manufactures:

- MACWHYTE PREformed and Internally Lubricated Wire Rope
- MONARCH WHYTE STRAND Wire Rope
- MACWHYTE Special Traction Elevator Cable
- MACWHYTE Braided Wire Rope Slings
- MACWHYTE Aircraft Cables and Tie Rods

MACWHYTE COMPANY, 2940 Fourteenth Ave., Kenosha, Wis. • *Mill Depots:* New York • Pittsburgh
Chicago • Ft. Worth • Portland • Seattle • San Francisco • *Distributors throughout the U. S. A.*

NO. 646

How to get them

Just circle those you wish and attach coupon to, or write on, your business letterhead.

Macwhyte Company
2940 Fourteenth Ave.
Kenosha, Wisconsin

1 2 3 4 5 6
7 8 9 10 11 12

I would like reprints of informative articles on wire rope conservation which you have published recently. I have circled those I wish.

Name _____

Title _____

Company _____

Co. Address _____

City _____ *State* _____

On a Sunday morning twelve months ago, America got out of bed and yawned and breakfasted, went to church and read the funnies or took a walk with the kids. We were a big, sleepy, good-natured people who only half believed that such things as war existed.

A few hours later we were awake. The thing that made us awake was treacherous and brutal, but the shock of it was as bracing as an icy shower. We knew, at last, where we stood and what we had to do.

YOU have a broad idea of what the nation has accomplished in this first year of war. We now report to you on what the men of one company have done and are doing.

Long before last December, "Caterpillar" Diesel Tractors and Motor Graders, Engines and Electric Sets were busy on what was then called "defense" work. With the country's entry into war, "Caterpillar" production was turned wholly to war purposes, and our plants, already working three shifts a day, stepped up their output of machines. Additional space was built. More workers were trained.

Throughout this crucial year, 100 per cent of this increased "Caterpillar" production has been going into the war effort — the vast majority of it directly to the *combat forces* of the Army, Navy and Marine Corps, and for our fighting allies. On all the world's battlefronts these machines are right in the thick of the struggle for freedom. "Caterpillar" Diesel equipment is clearing beachheads for attack troops, hauling big guns, building and repairing landing fields, drilling wells and pumping water. It is powering naval craft and generating current for lights and communications, afloat and ashore. But our report would be far from complete if it dealt only with combat activities. Here at home, thousands of older "Caterpillar" machines have been performing what appears to be a miracle. With no new machines coming from the factory to replace them — with fewer men to do the vital wartime jobs, and with heavier loads and longer hours a necessity — they have stood up under grueling punishment, month after month. In industry and construction, in mines and lumber camps and on the farms, "Caterpillar" Diesels are making a mighty contribution to the war effort.

They're no orphans — these tough, veteran machines. They are under able and expert guardianship. Back of their record of performance stand the "Caterpillar" dealers who have met the challenge of this emergency with energy and courage, and have shouldered full responsibility for keeping "Caterpillar" Diesel equipment doing its sturdy best.

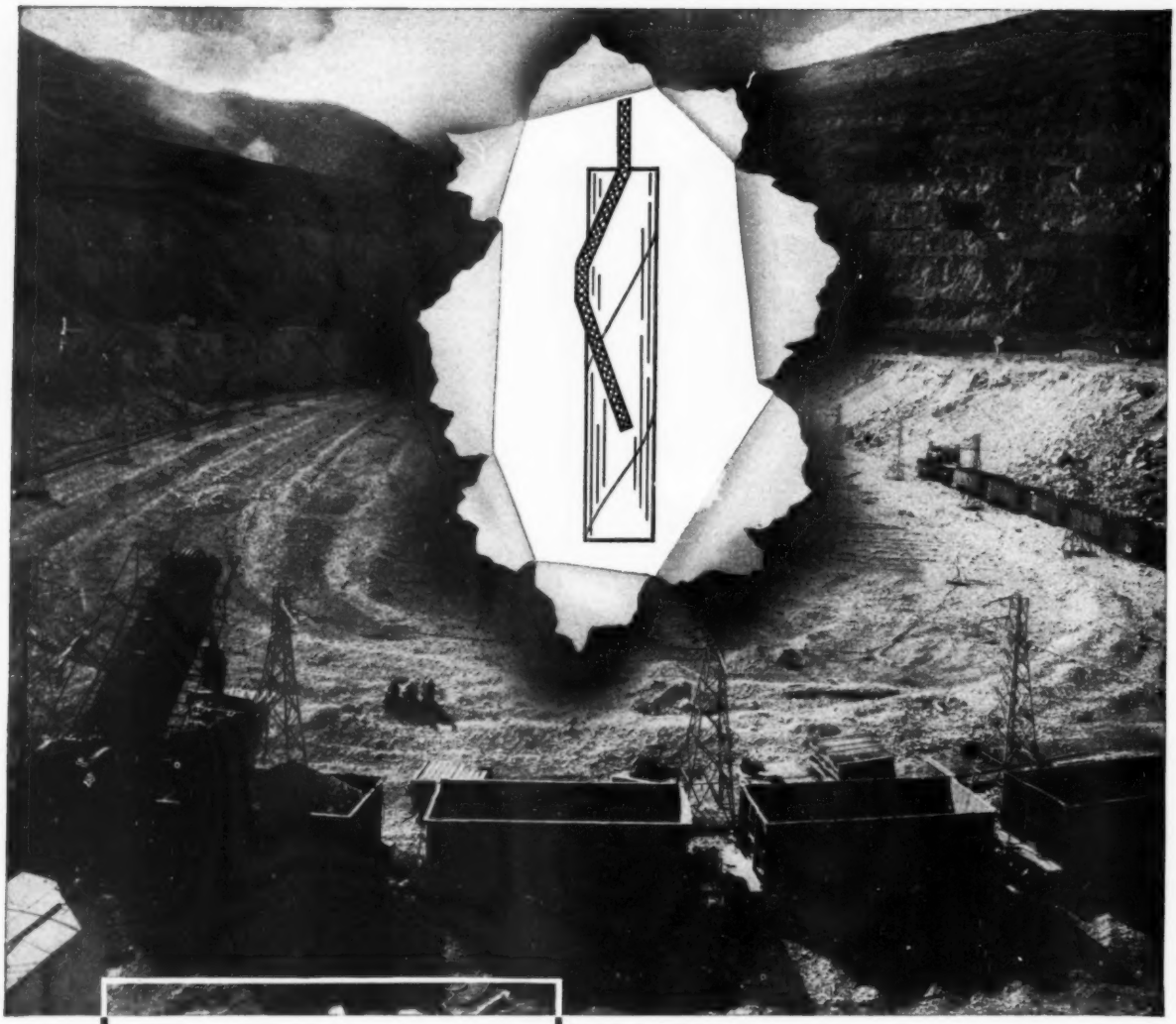
With a large supply of replacement parts in their stock rooms, and with complete service facilities available night and day, "Caterpillar" dealers everywhere are pledged to keep "Caterpillar" Diesel Tractors, Graders, Engines and Electric Sets delivering all of the long life and rugged dependability that are built into them — until victory is won.

CATERPILLAR DIESEL

REG. U.S. PAT. OFF.

CATERPILLAR TRACTOR CO., PEORIA, ILLINOIS

TO WIN THE WAR: WORK—FIGHT—BUY U. S. WAR BONDS!



Primacord for Small Holes? Certainly!

A series of small holes can be detonated economically by the use of Primacord. The "primer cartridge" for each hole is usually prepared by punching the cartridge as shown above. The length of Primacord is then laced through these punched holes.

Each bore hole is loaded and tamped as usual, but the Primacord (extending out of the holes) is connected to a trunk line of Primacord, and the entire blast detonated with a single fuse and cap or electric blasting cap attached at one end of this trunk line.

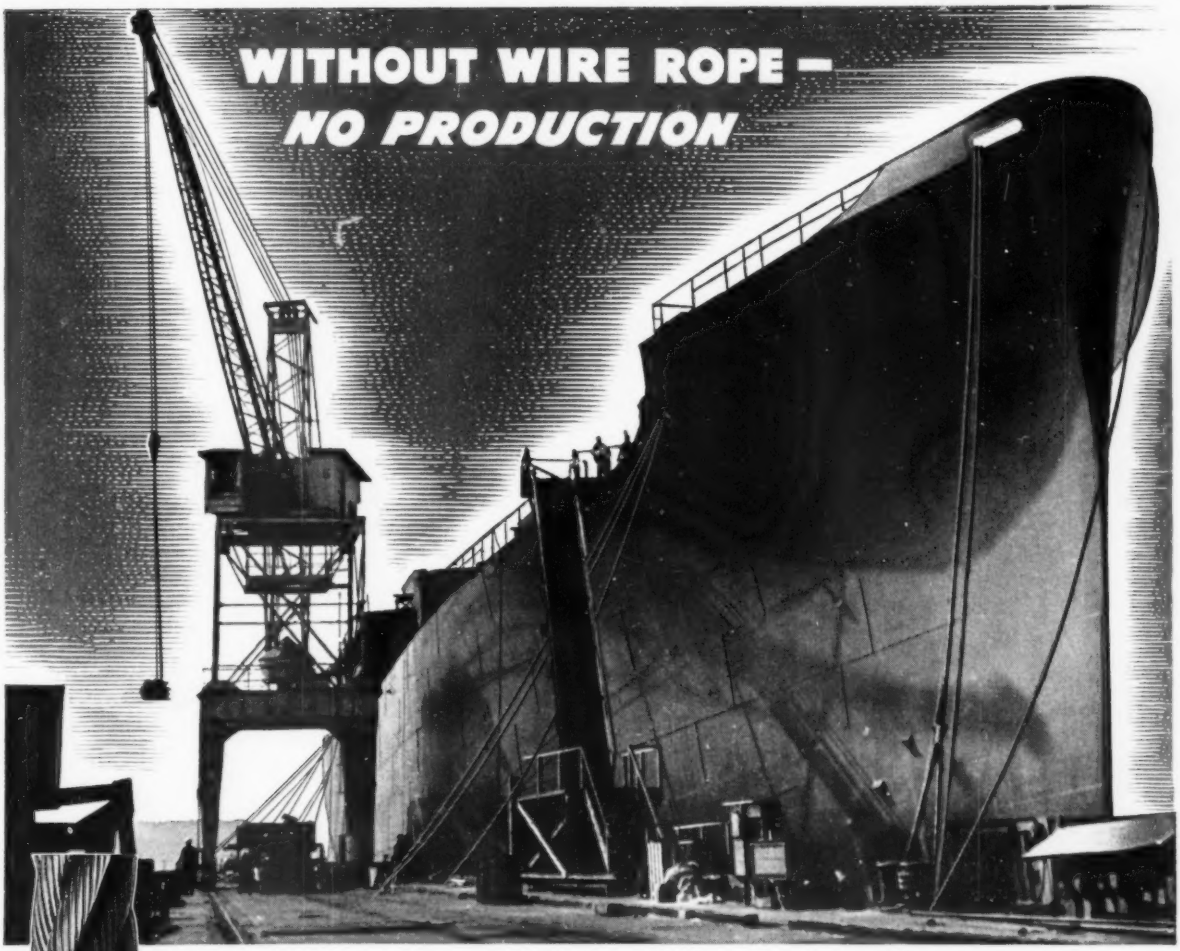
The light weight and flexibility of Primacord-Bickford Detonating Fuse promote ease of use, and—with its high efficiency—produce desirable economies in blasting. Send for the Primacord Book.

THE ENSIGN-BICKFORD COMPANY
SIMSBURY, CONNECTICUT

Manufacturers of Safety Fuse since 1836

PB-50

PRIMACORD-BICKFORD DETONATING FUSE



WITH TRU-LAY *Preformed* WIRE ROPE—

MORE PRODUCTION

Your machines will operate with fewer interruptions for wire rope replacement if they are equipped with American Cable TRU-LAY PREFORMED. That means steadier production; time and money saved; steel conserved. . . . Regardless of application, American Cable TRU-LAY PREFORMED WIRE ROPE invariably lasts longer than ordinary non-preformed rope. It gives you greater dollar value in increased service alone. But TRU-LAY does much more than this. It handles much easier, faster, *safer.* It is a flexible, tractable, willing-to-work rope—not the kinky, unruly kind that fights the men who are working with it. It spools on the drum better; runs true and straight over sheaves; requires no seizing when cut. . . . Aid production—conserve steel—save money by using American Cable TRU-LAY PREFORMED WIRE ROPE.

AMERICAN CABLE DIVISION

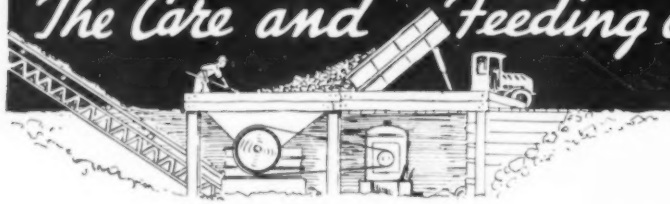
Wilkes-Barre, Pa., Atlanta, Chicago, Detroit, Denver, Los Angeles, New York, Philadelphia, Pittsburgh, Houston, San Francisco, Tacoma

AMERICAN CHAIN & CABLE COMPANY, Inc.

BRIDGEPORT • CONNECTICUT

ESSENTIAL PRODUCTS . . . AMERICAN CABLE Wire Rope, TRU-STOP Emergency Brakes, TRU-LAY Control Cables, AMERICAN Chain, WEED Tire Chains, ACCO Malleable Iron Castings, CAMPBELL Cutting Machines, FORD Hoists and Trolleys, HAZARD Wire Rope, Yacht Rigging, Aircraft Control Cables, MANLEY Auto Service Equipment, OWEN Springs, PAGE Fence, Shaped Wire, Welding Wire, READING-PRATT & CADY Valves, READING Electric Steel Castings, WRIGHT Hoists, Cranes, Presses . . . *In Business for Your Safety*

The Care and Feeding of Rock Crushers



No. 1 of a series of advertisements in the interests of national economy to aid users of crushing equipment unable to secure new units during the emergency.

Proper Feeding of Materials

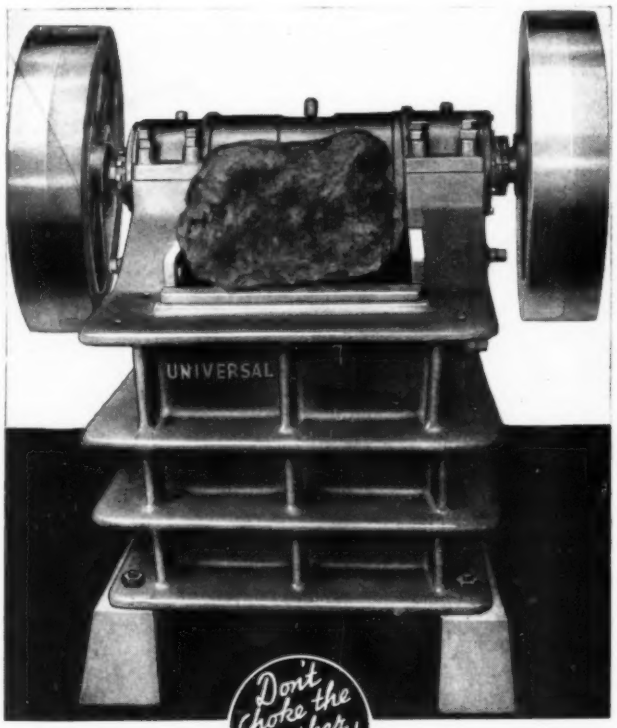
Avoid feeding stone that is too large for the crusher opening as it is certain to increase wear and cut production. As long as a large rock chokes the mouth of the crusher, no new material can be fed and an empty crusher is non-productive. Avoid dumping directly into crusher mouth as big rocks may be in the load to choke and damage equipment and its removal is a slow, tedious job.

Don't ever use a sledge hammer to break a large rock in the crusher while it is running. An accident with the sledge might easily result in serious damage to the crusher. It is much safer to stop the crusher. Better still— be sure all rock is reduced to the proper size before bringing it up to the crusher.

Use a dump box or ramp for handling incoming material, feeding by rake or shovels and breaking pieces too large for feed by hand. Of course, an apron or conveyor feeder dumping onto a grizzly or screen is preferred because it provides a steady feed and allows for by-passing fines, lessening the amount of material going through the crusher, reducing wear and increasing plant capacity.

Removal of excess clay avoids packing of the crusher jaws and slippage. Removal of tramp iron in the field or on the conveyor avoids costly breakdowns.

Universal Crushers and Crushing Plants are built for long time trouble-free service—proper care and maintenance will greatly extend their useful service life.



UNIVERSAL ENGINEERING CORP.

Formerly the Universal Crusher Company
610 C Avenue West,
Cedar Rapids, Iowa

UNIVERSAL

CRUSHERS, PULVERIZERS, COMPLETE PLANTS, SPREADEROLLERS, PORTABLE ASPHALT PLANTS